ETC

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• A REVIEW OF GENERAL SEMANTICS

an international quarterly of discussion, research, and theoretical inquiry in Non-Aristotelian systems and General Semantics

in Volume VII, Number 2:

ANATOL RAPOPORT analyzes the Lysenko controversy. Does it mean an end to scientific communication with Russia?

Traditional methods of teaching English lead to linguistic paralysis, says S. I. HAYAKAWA.

'The Gonks and the Tiger': a semantic fable by RAYMOND ROGERS.

Is the thalamus the seat of the 'emotions'? RUSSELL MEYERS presents the evidence.

Film discussion by RUSH E. WELTER. Book reviews by GEORGE A. TAYLOR, JAMES M. McCRIMMON, JULIA SIEBEL, KATHERINE COMER.

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ETC.: A REVIEW OF GENERAL SEMANTICS

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CONTENTS FOR WINTER, 1950

DEATH OF COMMUNICATION WITH RUSSIA? Anatol Rapoport 83

LINGUISTIC SCIENCE AND THE TEACHING OF COMPOSITION S. I. Hayakawa 97

THE NERVOUS SYSTEM AND GENERAL SEMANTICS
IV. THE FICTION OF THE THALAMUS AS THE NEURAL CENTER OF EMOTIONS Russell Meyers 104

OBITER DICTA:
THE GONKS AND THE TIGER Raymond Rogers 128

DISCUSSION:
THE 'FACTUAL' FILM IN A VISUAL AGE Rush E. Welter 137

BOOK REVIEWS:
Norman A. Cameron, *The Psychology of Behavior Disorders* George A. Taylor 142

S. I. Hayakawa, *Language in Thought and Action* James M. McCrimmon 145

BOOK REVIEWS (cont.)

Roy P. Basler, *Sex, Symbolism, and Psychology in Literature* — Julia Siebel — 148

Irene M. Josselyn, *Psychosocial Development of Children* — Katherine Comer — 151

CORRESPONDENCE:

Fenton Jameson, Frederick A. Philbrick, Ben Ehrlich, B. Trnka — 153

EVALUATIVE SYSTEMS AT WORK — 156

NEWS AND MISCELLANY — 160

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DEATH OF COMMUNICATION WITH RUSSIA?

ANATOL RAPOPORT

WHAT OCCURS in the Soviet Union, particularly in the world of ideas, should be of great interest to any one concerned with the improvement of communication. Therefore some explanation is in order of the fact that since its inception this journal has published only two major articles dealing with intellectual life in the U.S.S.R.[1]

It was hoped that following the end of the war an extensive exchange of ideas and opinions could be established between the United States and the Soviet Union to the advantage of both. Instead, the tenuous line of communication maintained during the period of military cooperation was broken with the onset of the so-called cold war. Now citizens of both countries are deluged with torrents of words piped into every home through the channels of mass communication, calculated to arouse fear and hatred of the 'enemy.' Appeals to sanity are weak in the United States and absent in the Soviet Union. The vicious circle of self-justifying suspicions is operating. Fear leads to 'precautionary measures,' which are interpreted by the other side as hostile acts; these lead to retaliation which justifies the original fear; these retaliatory measures compel more drastic measures on the other side, which in turn call forth more retaliation.

A journal devoted to the aims of general semantics should endeavor to improve effective communication and cooperation in the world. It would seem, therefore, that one of the functions of *ETC.* should be to take every opportunity to minimize the existing fears. One way of doing it would be by debunking the myths of irreconcilable differences. Perhaps some good could be accomplished if it could be shown that the Soviet citizen, beneath his shell of Marxist-Leninist ideology, and his American counterpart, for all his verbal preoccupation with Free Enterprise, have basically the same needs—food, sex, security, companionship, and self-realization.

However, to have an appreciable effect, the realization of the basic invariance of human needs must be internalized by a sufficient number of people. But this

[1]A. Rapoport, 'Dialectical Materialism and General Semantics,' *ETC.*, 5.81-104 (Winter 1948), and B. Bykhovsky, 'The Morass of Modern Bourgeois Philosophy,' *ETC.* 6.1-15 (Autumn 1948).

journal is far from being a channel of mass communication and so cannot undertake the task of mass therapy.

Yet we have always thought that this journal does to some extent contribute to the integration of mankind by serving as an organ of discussion and research in general semantics, the study of evaluative processes, in particular those underlying rational, time-binding behavior. Our circulation is limited, but our surveys show that a large majority of our readers are engaged in work where a broad and complex application of scientific evaluations is required. Many are scientists, executives, scholars, physicians, teachers, and counselors. They are curious, self-critical, and forward-looking.

We have come to view these people as a *focal area* of the new non-aristotelian orientation, indispensable for the maintenance of our civilization. We have entertained a hope that such focal areas could be found all over the world, and to some extent this hope has been justified. At present, groups similar to our Society for General Semantics exist in the Netherlands, Argentina, Australia, and Japan. We had hoped that such a group could exist and find expression in the Soviet Union. For some time after the war, *Synthese,* the organ of the International Society for Significs, had an Eastern European department, in which contributions by Polish and Russian scientists appeared. Wishing to further this opportunity to receive first hand reports on the progress of scientific work, particularly on epistemological questions, we have asked Russian writers to contribute to *ETC.,* indeed to offer criticisms of our point of view. No reply ever came.

In 1947 contributions to *Synthese* from Eastern Europe ceased, and at the same time extremely bitter denunciations appeared in Soviet journals of the entire semantic movement.

Still the hope persisted that at least among Western and Soviet *natural scientists,* some sort of understanding could continue, a hope based on the fact that, of all areas of human activity, natural science seemed most free from provincial prejudice, most unambiguous about the criteria for truth, and therefore the most fertile area of proper evaluation and agreement. Whatever each might think about the sanctity of free enterprise or the inevitability of the dictatorship of the proletariat, it still seemed that the Eastern and the Western scientists could agree on how to measure Planck's Constant or on the hereditary mechanisms of drosophila.

WITH THE PUBLICATIONS of the discussions concerning genetics which took place in the Soviet Union in 1948, this hope has dimmed. The material has been compiled by Conway Zirkle in a book entitled *Death of a Science in Russia.*[2] The connotations of the title might lead one to suspect that this is another emotionally charged protest against something or other in the name of

[2] University of Pennsylvania Press, Philadelphia, 1949.

something or other. However, such is not the case. The author of the book, or rather its editor, limits himself to only a few explanatory remarks. The bulk of the book consists of verbatim translations of discussions on genetics, written and oral, in the Soviet Union up to the moment when T. D. Lysenko announced the approval of his doctrine by the Central Committee of the Communist Party. Following this announcement, all public comments by Soviet geneticists were confined to recantations and promises to reform.

It now seems that at least in one area (biology) Soviet scientists have decided (or were forced) to sever their cooperation with scientists in the rest of the world. They have decided (or were forced) to abandon the basic tenets of rational evaluation on which scientific method rests—open-mindedness, objectivity, and the critical attitude.

EVERY DISTINCT KIND of discourse can be easily recognized by anyone who has had sufficient contact with it. French feuilletons, speeches in the British parliament, and Methodist sermons, all have their peculiar tone. So do discussions at scientific conferences. And it is well known that the tone at a Japanese biological conference will resemble the tone of an American biological conference much more than it will the tone of a Japanese newspaper editorial. This unity of tone, which scientists all over the world have to a large extent achieved, may be considered as a hopeful sign that, at least in one area of activity, human beings succeed in freeing themselves from the prejudices of their cultures.

The first thing which strikes the scientific reader of the biological discussions which took place at the sessions of the Lenin Academy of Agricultural Science is the complete absence of the customary tone of scientific discussion such as prevails among scientists all over the world. The utterances of the 'Michurinists' (and to some extent even of the geneticists they attack) resemble the jargon of Soviet officialdom to such an extent that the *Pravda* editorial included in the collection could well be mistaken for a continuation of the 'technical' discussion.

The excessive use of clichés is comparable only to some of the worst examples of American and French journalism of the jingo level. Granted that the use of clichés is not in itself evidence of the rejection of extensional orientation, and that scientific writings are full of clichés of their own, nevertheless there is a consistent pattern of misevaluation inherent in the clichés used that forces one to the conclusion that one is dealing not with fruitful discussion but with compulsive verbalizations of profound semantic disturbance. The following are some of the more obvious misevaluations manifested.

JUDGING BY THE REMARKS made at the session of the Lenin Academy, Soviet biologists indulge in labeling proudly, profusely, and recklessly and take all the intellectually disastrous consequences of such behavior. Disciplines, theories,

points of view are often hypostatized and personified. One does not speak of evolution—one speaks of 'Darwinism' (even to the extent of calling professors of the subject professors of Darwinism); one does not speak of genetics but of 'Mendelism' or, more formally, of 'Mendelism-Morganism' or, still more formally, of 'Mendelism-Morganism-Weismannism.' Lysenko refers to his own theories as 'Michurinism' or 'Soviet Darwinism.' The significance of labels is taken in dead earnest. For example, Lysenko takes issue with the labeling of Michurin's ideas by the opposition, saying,

> . . . it is not at all possible to call the Michurin concept either Neo-Lamarckism or Neo-Darwinism. It appears as a creative *Soviet* Darwinism. (My italics—A.R.)

Such preoccupation with labels is not confined to Lysenko's followers. It seems that Professor I. A. Rapoport, himself under heavy fire as a 'Mendelist-Morganist-Weismannist,' attempted a label-sticking counterattack by dubbing Michurinism 'Machism.'[3] But Professor Rapoport is playing against the house, and such tactics are of no avail. Academician I. I. Prezent, who is on the winning side and knows it, squelches Rapoport with the following argument:

> With equal success, Rapoport could have declared that Darwinism as a whole, is nothing but Machism. After all, the basic concept of Darwinism is adaptation, and Mach, as is well known, has built his false philosophy of 'empirio-criticism' on the irrelevant application of this concept to epistemological processes.

This preoccupation with labels seems a natural consequence of an obsession to discredit rather than refute an opponent (no attempt is made to understand him). This attitude manifests itself in a compulsive classification of all views as *either* friendly *or* hostile, with a strong bias in favor of the latter classification. One does not ask, 'What is he saying?' but rather 'What does this make him?'

The frequent use of labels derived from names of individuals seems to arise inevitably from this sharp friend-or-foe dichotomy, inasmuch as such individuals are constantly singled out for either violent abuse or lavish praise. In spite of the official 'materialist conception of history,' the hero-villain interpretation of events seems to take precedence. One is supposed to have signal reactions of loyalty to Leninism, Stalinism, Stakhanovism, Michurinism, and so on, and equally prompt reactions of disapproval toward Machism, Trotzkyism,[4]

[3] Ernst Mach, a Viennese physicist of the late 1800's figures as an arch-villain in the Soviet conception of dialectical materialism. For the origin of Soviet Machophobia see Lenin's *Materialism and Empirio-Criticism,* Philipp Frank's *Modern Science and Its Philosophy,* and the present writer's 'Dialectical Materialism and General Semantics,' *ETC.* 5.81-104.

[4] Winston Churchill tried similar tactics when the Russians were still 'our gallant allies,' and some explanation was in order why British troops were shooting Greek partisans who had fought the Nazis. Mr. Churchill called the partisans 'Trotzkyists,' evidently relying on word magic. But the Russians were evidently not impressed.

Ghandi-ism, Titoism, and so on. I remember reading a musical criticism back in the twenties when the memory of Kautsky, the evil spirit of 'revisionism,' was still fresh. The critic actually succeeded in finding strong traces of Kautskyism in a string quartet. This kind of evaluation has always been common in Marxist polemics and criticism; the material exhibited in *Death of a Science in Russia* indicates that it has now become a standard evaluative pattern in *scientific* discussion.

Appeal to Authority

JUDGING BY THE MATERIAL compiled by Professor Zirkle, *not a single report of a single controlled experiment* was produced at the conference of the Lenin Academy of Agricultural Science to shed light on the question presumably under discussion: Is there evidence for the hereditary transmission of acquired characteristics?

Lysenko did exhibit a tomato plant bearing both red and yellow fruit and talked as if this hybrid enabled him to give a *coup de grace* to genetics. The fact that such experiments have been performed for years and are explainable on the basis of the simplest principles of Mendelian genetics seems to be of no consequence to him. He also claims to have transformed 28-chromosome wheat into 42-chromosome wheat by manipulating the external environment. But what were his procedures, his materials, his strains, his controls, his reasoning, he does not say.

While objectively verifiable evidence of any kind is totally lacking in the arguments of the Michurinists, citations of canonized authority are plentiful. Absolutely unimpeachable sources are assumed to be, as in political speeches, the works of Marx, Engels, Lenin, and Stalin. The very act of quoting these sages is evidently an act of bolstering one's prestige and of strengthening one's position, *whether the quotations have any bearing on the subject or not.*

Thus Lysenko in his report quotes Engels' criticism of Darwin's notion of the struggle for existence because of the similarity it bears to Malthus' population theory. The intricate chain of connection between this polemic and modern genetics can be understood only in the light of the 'guilt by association' principle so characteristic of all forms of bigotry. The implied argument runs something like this: Darwin's notion of the struggle for existence is like Malthus' notion of overpopulation (or is popularly considered to be). But Malthus was (or is popularly considered to be) an apologist for the capitalist economy of scarcity. Hence the notion of the struggle for existence is reactionary and hence false.

What has this to do with the inheritance of acquired characteristics?

The struggle for existence notion goes hand in hand with 'natural selection.' But the geneticists are making use of the natural selection idea to bolster their theories of random mutations. Therefore, so the argument goes, the theory of

random mutations is false. But if mutations are not random, they must be purposeful. In fact, they are nothing but the adaptations of the organism to its environment. It follows that the hereditary transmission of acquired characteristics must be a fact.

In other instances one need not be a trained dialectician to see the pertinence of a cited authority. For example, A. V. Michalevich [5] argues thus in favor of the theory of transmission of acquired characteristics:

> More than ten years ago, there was a gathering in the Kremlin of our foremost collective farm (kolkhoz) workers, leaders of higher crop yields, with a view to mutual exchange of experience and of sharing plans for a further struggle for kolkhoz abundance; and it was at that significant gathering that T. D. Lysenko gave a report to our Leader and our best kolkhoz workers about his first successes and daring plans of developing an essentially new Soviet biology. Thousands of kolkhoz workers remember the inspiring comment made by I. V. Stalin during that speech: 'Bravo, Comrade Lysenko, bravo!'

Citations from Michurin, Lysenko's intellectual sire, who is now canonized as an authority on biology, are no more enlightening as to the scientific evidence for the transmission of acquired characteristics. Here is a sample cited by Academician Mitin:

> Only on the basis of the teachings of Marx, Engels, Lenin, and Stalin is it possible fully to reconstruct science. The objective world—nature—is primary; man is part of nature; but he must not merely contemplate this nature externally, but, as Karl Marx has said, he can change nature. The philosophy of dialectical materialism is a weapon for changing this objective world; it teaches to influence this nature actively and to change it; but to change and influence nature actively and consistently is within the power of the proletariat alone—thus says the teaching of Marx, Engels, Lenin, and Stalin—the unsurpassed giant-minds.

Renunciation of Objectivity

IF THE IDEAL of scientific cognition is to discover *invariants independent of the observer* and thus enable men to predict events and to agree with their fellow men on what is true and, perhaps, on what is best, this ideal is openly renounced by Soviet officialdom. An editorial in *Pravda* following the session criticizes the Praesidium of the Academy of Sciences and the Bureau of the Biological department as follows:

[5] Mr. Michalevich is not a biologist but a journalist. The reasons his remarks should carry weight in a discussion about mechanisms of heredity are given by Mr. Michalevich himself somewhat as follows: biology is ultimately connected with agriculture; efficient agriculture is necessary for the welfare of the Soviet state; Soviet newspapers are likewise concerned with the welfare of the state; therefore journalists should take an active part in discussions of biological theories.

> [They] forgot the most important principle in any science—the Party principle. They pegged themselves to a position of political indifference and 'objectivity.' The U.S.S.R. Academy of Sciences forgot the instructions given by V. I. Lenin that 'partisanship' is inherent to materialism and that materialism, whatever phenomena are being considered, must stand openly and directly on the viewpoint of a definite public group.

In an earlier article, I have pointed out characteristic mannerisms in Lenin's philosophical polemic which indicated an intense compulsion to view each difference of opinion as irreconcilable and to condemn every attempt to reconcile such differences as 'wishy-washy,' 'opportunistic,' or downright dishonest. In fact, any 'modified' position seemed to annoy Lenin extremely. If someone whom he considered to be in the 'enemy' camp expressed any view acceptable to him, he took great pains to prove that the opponent was either guilty of inconsistency or was muddle-headed, or else (a favorite explanation) was 'masking' his real nature. If someone who was in his own camp expressed a view unacceptable to him, he again either accused him of muddleheadedness or argued that eventually this view would drive his erring colleague to the complete acceptance of the 'enemy' position. As Lenin wrote:

> Enmesh a single claw and the bird is lost . . . You cannot eliminate even one basic assumption, one substantial part of this philosophy of Marxism (it is as if it were a solid block of steel) without abandoning objective truth, without falling into the arms of bourgeois-reactionary falsehood.[6]

This two-valued orientation was carried into all political discussion in the U.S.S.R. during the first two decades of its existence.[7] When, after the purges of 1937-1938, virtually all free discussion of political matters ceased (at least in public), this attitude was carried over into philosophy and esthetics. The attack on genetics reveals this friend-or-foe attitude penetrating now into discussions of presumably scientific matters. A quotation or two from the report of Academician I. I. Prezent will serve as illustrations.

> At present a great divide has been delineated between the Mendel-Morgan (Weismann) trend, on one hand, and its opposite, Michurin trend on the other. In this connection, it is extremely important to examine the attempts, made both at this session and outside, to find some common ground for a reconciliation of these two opposed trends.
>
> Is it at all possible?
>
> It must be admitted that such a line of 'reconciliation' is perhaps possible . . . Briefly speaking, in order to 'reconcile' Morganists with Michurin's teachings, the Morganists must give up every single theoretical position of their false doctrine.

[6] See A. Rapoport, *op. cit.*

[7] See, for example *History of the C.P.S.U., A Short Course.*

Later Mr. Prezent summarizes his remarks as follows:

> Comrades, we may gladly state that our Soviet biologists, armed with Michurin's doctrine, have already smashed Morganism. Let no one be confused by the false analogies of the Morganists about the invisible atom and the invisible gene. A far closer analogy would be that between the invisible gene and the invisible spirit. [This is equivalent to an accusation of 'fideism,' 'mysticism,' or something equally horrendous—A.R.]. We are being challenged here to a debate. We shall no longer debate with the Morganists (applause); we shall expose them as the representatives of a harmful, ideologically alien, imported-from-abroad tendency. (Applause) Michurinists face the future with courage. We have a real leader, and you have—Schmalhausen! [8] . . . The future belongs to Michurin and to Michurin alone! (Wild applause)

Word Magic and Wishful Thinking

THE NUMBER OF ASSERTIONS made at the conference devoid of operational meaning is appalling. We have already mentioned compulsive labeling and a morbid obsession with 'unmasking,' 'revealing the true nature of.' The propositional function, 'X-ism masquerades as Y-ism, but in reality it is nothing but Z-ism,' could serve as a pattern for any number of accusations and denunciations made by the Michurinists. Most of the alleged Morganist-Weismannists defend themselves by uttering similar noises: 'I have been called an X-ist. But really I am just as good a Y-ist as you are.' Some examples chosen at random will reveal the total lack of any attempt to extensionalize the issues.

Lysenko: 'By getting rid of Mendelism-Morganism-Weismannism from our science we banish chance out of biological science.'

Prezent: 'Mendelism-Morganism has already revealed its yawning void; it is moreover rotting from within, and nothing can save it.'

Dvoryankin: 'The tactics of orthodox Weismannists in our country consist in a 'Mendelization' of the Michurin doctrine.' [9]

Simonov: 'Academician T. D. Lysenko always stands for a new, progressive teaching, and we know that new, progressive forces win, because they are called to life by the conditions of development, by reality itself. And it is unbecoming to some of our scientists to resurrect the non-existing laws of Mendel and Morgan—and to forget the mighty heritage of Michurin, Timiryazev, and Williams.'

Lobanov: 'The anti-Michurin trend in biology is founded on metaphysics . . . The champions of this school are prisoners of the bourgeois theories of Mendel, Morgan, and Weismann. They have not yet freed themselves of their servility to bourgeois science and willingly or unwillingly choke science with anti-scientific ideas.'

[8] One of the geneticists singled out for intellectual lynching by the Michurinists.

[9] *Cf.* the dread of the Nazis of the 'Jewification' of the 'Aryan race' and analogous phobias among our own white-supremacists.

Side by side with the above incantations to ward off the evils of Mendelism-Morganism-Weismannism runs a strong current of wishful thinking. The *desirability* of the truth of a theory is taken to be *proof* of its truth. On the basis of this confusion, the geneticists are attacked somewhat as follows: 'The inheritance of acquired characteristics opens vast potentialities in agriculture and in animal husbandry. By denying the possibility of acquired characteristics, the Morganists are depriving the Soviet people of the benefits that could be reaped from them.'

Thus sabotage as well as ideological heresy is pinned on the geneticists with a single stroke of inexorable logic.

ONE OF THE MOST FRUITFUL notions of Marxism is what has subsequently come to be known as the sociology of knowledge. Marx and Engels conjectured that the stratification of society resulting from its economic structure is also reflected in an ideological superstructure, imposed on the society by its ruling class. Both Marx and Engels found plentiful evidence in support of this theory. It seems that not only notions about human relations can be rationalizations of particular class interests, but that these rationalizations also spread into the general world view. It is thus entirely conceivable that the social structure of a society can influence the structure of its knowledge.

A formal application of this theory provides Soviet officialdom with a rationalization of their pronouncement that there is emerging in the U.S.S.R. a 'Soviet science' fundamentally different from 'bourgeois science.' The superiority of Soviet science is usually supported by any of the following arguments, which, unfortunately, are not entirely consistent with one another.

1. *Bourgeois science is not sufficiently applied.*

'Bourgeois science,' *Pravda* editorializes, '. . . is cut off from the people by a Chinese wall and is alien to the people. Soviet science is strong in that it does not fence itself off from the people, but willingly and voluntarily serves them.'

Whatever its validity, this argument is at least to some extent capable of extensionalization. One could, for example, compare the per capita consumption of electric power in the U.S. and the U.S.S.R., or, more significantly, the increase in the per capita consumption of electric power over a given period of time in the two countries. Such a comparison might be taken as a measure, in a way, of the application of scientific discovery to popular needs. To take another example, one might compare the breadth of distribution of the per capita consumption of electric power and thus measure, in a way, how equitably the results of technological progress are shared by all the people. Or one might proceed to test the contention that 'bourgeois science' is not sufficiently applied in any number of other ways. One could venture to say that depending on what one measured, the contention would be supported or refuted in varying degrees. One might find, for example, that in the applications of certain aspects of

medical science, the U.S.S.R. is ahead of the United States; and one might also find that in some other aspects the reverse is true. The overall score could be computed only if some agreement could be made on the relative importance of applying various areas of scientific knowledge to human needs.

2. *Bourgeois science is applied to wrong things.*

The Praesidium of the Academy of Sciences of the U.S.R.R. in its reply to Professor Muller of the University of Indiana, who resigned from the Academy following the purge of the geneticists, speaks of the 'utilization of scientific achievements by American imperialists for the purpose of mass destruction of people and cultural treasures.'

This argument would have considerably more weight if it were shown that in the Soviet Union scientific discoveries are not utilized for military purposes. In spite of our own depressing record in this respect (and announcement has just been made of the decision to manufacture the hydrogen bomb), there is no evidence that the Soviet Union is devoting more, or as much, of its scientific potential to peaceful uses than the United States.

3. *Bourgeois science is based on an idealistically-reactionary philosophy, while Soviet science is based on a materialistically-revolutionary philosophy.*

It seems extremely difficult to extensionalize this contention. It would be interesting, however, to see a proof that the 'bourgeois' concept of heredity as residing fundamentally in material genes is 'idealistic,' while the Soviet concept of 'purposeful adaptation' is 'materialistic.' But then, of course, there is always 'vulgar materialism,' which is really nothing but 'masked idealism.'

4. *Bourgeois science is not science.*

Following the announcement of Lysenko that his thesis was approved by the Central Committee of the Communist Party, all references to 'Mendelism-Morganism-Weismannism' implied that it was 'fake bourgeois science,' 'pseudo-scientific,' or 'anti-scientific.' Chronic quotation marks (a symbol of contemptuous dismissal in Soviet pronouncements) appeared around the word 'theory' when it referred to genetics.

THESE ARE the distinctions which Soviet officialdom makes between 'bourgeois' and 'Soviet' science. As we have said, the first two concerning the applications of science, although not necessarily true, at least are capable of making sense, because they are to some extent capable of extensionalization. It is certainly reasonable to suppose that the structure of society will influence the extent to which scientific discoveries are applied and even the directions in which scientific research will develop. Furthermore some social structures may encourage and others altogether inhibit scientific research.

As to 'idealistic' and 'materialistic' orientations no fruitful meaning can be assigned to these terms with regard to the methods in the natural sciences. Science has long outgrown this dichotomy of eighteenth and nineteenth

century philosophy. In the social sciences, some meaning can perhaps still be assigned to 'materialistic' and 'idealistic' orientations. But if they are to have any relation to their historical meanings, then what passes for 'social science' in the Soviet Union can be more significantly termed idealistic than materialistic.

The last pronouncement that 'bourgeois science is not science' deserves most serious attention. To examine its truth value, one must define science. We wonder if the Praesidium of the Academy of Sciences of the U.S.S.R. would agree to this definition:

Science is a body of techniques of deduction and observation so organized that any one trained in these techniques will come to the same conclusions from the same assumptions *independently.*

If they would, they would have to account somehow for the fact that two investigators separated by half the circumference of the earth do come independently to the same conclusions concerning hereditary characteristics of organisms by using the deductive and observational techniques indicated in 'Mendel-Morgan-Weismann' genetics.

But perhaps they would not agree to the definition. Perhaps they would maintain that in accordance with the 'class basis' of all cognition, 'proletarian scientists' could not have in common with 'bourgeois' scientists either the same set of initial assumptions or the same deductive techniques. If so, one is compelled to ask how far this extension of the 'sociology of knowledge' is applicable. In spite of the fact that Chinese, Egyptian, and Mayan arithmetics give the same computational results, will a fundamentally different 'Soviet' arithmetic arise? Or is an arithmetic Soviet simply if children add tractors instead of apples? Are special meanings to be attached to 'Soviet mechanics,' 'Soviet thermodynamics,' and 'Soviet physiology'?

It is one thing to discover that in many areas of cognition the evaluative process is influenced by 'ideology,' and quite another to make a dogma of this principle for the purpose of silencing all dissenting opinions as *ipso facto* stemming from a hostile ideology.

The fruitful results of the sociology of knowledge initiated by Marx and Engels lie in the modern relativistic orientations, which have found their most significant expression in physics and in social anthropology. However, the most significant thing in relativism is not the variability of truth but the discovery of *higher invariances,* of which the variable manifestations are only special cases.

To the six blind men the elephant appeared as a 'rope,' a 'wall,' a 'snake,' and so on. But the man with sight sees all this and the 'elephant' too.

Creative relativism does not stop at declaring that the world looks different to people with different prejudices. By uncovering the prejudices, it provides the opportunity for additional insight which enables us not only to explain the world more satisfactorily but also to see how the narrower points of view gave rise to the contradictory evaluations.

When the horizons of physics were pushed back with the appearance of the Theory of Relativity and Quantum Mechanics, there was no need to proscribe newtonian mechanics as reactionary or to heap abuse on its adherents. But the bearers of the new 'emancipated' biology have the following to say about the advisability of thrashing out scientific questions:

'Nobody forbids or can forbid arguments in science,' says Mr. Dvoryankin, one of the Michurinists; then he goes on to elucidate his adherence to freedom of discussion: 'Let us argue within the single stream of the Michurinist trend about how best to assimilate this teaching.'

THERE IS A FABLE by the great Russian folk poet Krylov about a pig who ate his fill of acorns under an oak tree and then started to root around the tree. A crow sitting in the oak tree remarked, 'You should not do this. If you lay bare the roots, the tree will wither and die.' 'Let it die,' replied the pig. 'Who cares as long as there are acorns?'

One of the most persistent accusations that Michurinists and Soviet officialdom level against genetics is that it is a sterile laboratory game, divorced from 'practice,' not yielding 'practical results,' and hence, to use Dr. Mitin's picturesque description, 'anti-people.'

In trying to evaluate the accusations, one is at a loss whether to take them seriously or not. It may be that they are just a variety of name-calling, so that it would be just as futile to analyze them as to analyze the literal implications of someone calling someone a pig. If they are meant only as snarl-words, as so much political verbiage is, then it is just another indication that the morbid aggressions which pervade so much of Soviet life have penetrated into the scientific community and are beclouding scientific issues.

Unfortunately, the indications are that this latest campaign against 'pure' science extends beyond the snarl-word level. Not only have leading geneticists been summarily dismissed from academic and research positions, but whole laboratories and institutes have been liquidated. Besides, the purge of 'academic' tendencies has extended to other fields, such as statistics.

One naturally asks, how far is this to go? Does the study of extra-galactic nebulae and of cosmic radiation yield 'practical' results? Some of the finest work in those fields was done in the Soviet Union. Are analytic theory of numbers and the theory of topological groups 'practical'? Vinogradov and Pontriagin, the leading authorities in these fields, are Soviet scientists. Did the work of Pavlov (who died in time and was canonized) yield immediate 'practical' results?

Of course, the high priests of Soviet officialdom, who feel no compunction about soaring to the highest levels of verbal abstraction, may very well reply, Certainly those scientists have achieved practical results! They have clarified our understanding of nature!'

'But how about the geneticists, your great Soviet geneticists?' one might persist.

'On the contrary, they have attempted to *obscure* man's understanding of nature,' they might say.

'How?'

'By furthering reactionary-idealistic theories,' a reply true to form could be.

Without extensionalizing 'reactionary-idealistic theories' and the criteria for 'clarification' and 'obfuscation,' further argument is futile.

Under these circumstances, it may very well be that the astronomers, mathematicians, biochemists, and philologists are even now waiting their turn to be declared non-essential or harmful or obscurantist or formalistic or reactionary. There are no objective criteria. There is no appeal.

Consistency cannot be expected from a leadership responsible to no one but itself. If, however, the purge of the geneticists is not just another act of intellectual terror, if it is really a part of a consistent pattern to eliminate 'pure' science as useless in a 'socialist' society, then one is indeed witnessing a long range suicide of what started out as a culture full of promise.

One may well imagine where the most 'practical' applications of science would be today if Faraday had been prevented from working on the grounds that his electrical gadgets were mere toys without any foreseeable application; or if Mendeleyev's periodic table had been declared by the czarist government to be a mere 'formal' exercise and suppressed. What would be the state of Soviet atomic science today if the Theory of Relativity had been pronounced an idealistic heresy 'divorced from the people'?

THE FEELING AGAINST the spirit of scientific investigation as a devoted search for truth is all too apparent in the diatribes of the Michurinists. They stoop to the depths of a Westbrook Pegler in ridiculing the investigations of Dubinin, the foremost Soviet geneticist. They invoke the basest passions in order to make his work appear *immoral*. It happened that the devastation of the war provided an opportunity for studying the effect of a drastically changed environment on the processes of natural selection in *drosophila*. Accordingly, Dubinin undertook to study the 'wild types' of *drosophila* collected in a ravaged city and found extremely interesting results. Lysenko and his followers represent this work as as example of utter social irresponsibility, implying that during the great cataclysm of war Professor Dubinin could be so indifferent to the emergency as to spend his time worrying about how the war affected the hereditary mechanism of fruit flies.

On another occasion, Mr. Prezent ridicules the terminology of genetics. He rattles off 'allomorphoses, telomorphoses, catamorphoses, hypomorphoses, hypermorphoses, and epimorphoses,' which in Russian sound even more like gibberish than in English to the uninitiated ear. There is considerable evidence

that there was an abundance of uninitiated ears among the newly elected members of the Academy.[10]

Such was the death of a science in Russia. There is a Russian word for it —*razgrom*. It comes from the same root as *pogrom* and has a similar meaning—a raid, an utter destruction. Previously the word *razgrom* was applied to the liquidation of factions, political groups, and counter-revolutionary conspiracies. Since the early thirties, it has been applied to the rooting out of heretical schools of thought or 'decadent' art movements. Now and then one read in Soviet newspapers about a *razgrom* of this or that 'ism,' which usually derived its name from some unfortunate professor or artist who was marked to be the focal point of the attack. Now for the first time a major branch of science has been subjected to a *razgrom*.

The material in Professor Zirkle's book makes it evident that the last hope of intellectual understanding with Russia, on the basis of the objective, clear-headed rationality of science, is vanishing.

WHERE DO WE GO from here? It would be all too easy to say, 'Well, at least we know where we stand. All right, if that's the way you want it.' Such 'bowing to the inevitable' does not solve the problem of communication, the most pressing problem facing humanity today. One can abandon a 'hopeless case' if the case is an individual. One cannot abandon half a world.

Attempts at liaison must continue. Horrible as the instances of mass unsanity seem, they are no more horrible than any clinical symptoms of mental disturbance. No purpose can be served by hating or ridiculing a patient, although he does appear ridiculous by all ordinary standards. The writer himself pleads guilty to having succumbed to the temptation of sarcasm.

We can utilize Professor Zirkle's contribution to science in editing and publishing *Death of a Science in Russia* in at least two ways. It can serve as a warning of what can happen to science even in our 'enlightened' time if all ends are subordinated to the promotion of a dogmatic ideology. And this means a warning to us also. The Scopes trial of 1926 may have been a farce, but such farces can take ominous proportions. Secondly, we may still try to establish communication with the non-Soviet Communist world. Communist China will need science and will welcome it. The Chinese Communists have so far avoided many of the mistakes that the Soviets, in their obsession with 'capitalist encirclement,' have committed. Perhaps a sympathetic attitude on the part of Western scientists to the problems of new China may prevent a similar slamming of doors. Here is a quarter of the world's population clamoring for the fruits of science. Perhaps they can be won over to the ways of science. Perhaps they can be convinced that even though only the branches of a tree bear fruit, one should not tamper with the roots.

[10] Prior to this decisive conference, the Academy was packed with loyal Michurinists.

LINGUISTIC SCIENCE AND THE TEACHING OF COMPOSITION*

S. I. HAYAKAWA

THE MOST COMMON RESULT of the teaching of English and composition is not the creation of good writers and speakers, but the creation, in most of the public, of a lifelong fear of grammatical errors. Grammar is, like logic, what Charles W. Morris calls, in *Signs, Language and Behavior,* a systemic discipline. And the ordinary result of systemic disciplines is to make discourse possible. Such, naturally, is our avowed purpose as teachers of English. But somehow or other the purpose is subverted by our methods. To be sure, we help some of our students to speak and write better. But the majority of fair-to-middling students leave the English class feeling that 'correct English,' like moral perfection, is something that they cannot hope to attain. Burdened, as the result of our castigations, by a sense of linguistic Original Sin, they depart from school feeling, like those Puritans who felt that whatever was fun must be sinful, that whatever sounds natural must be wrong. It is tragic that most Americans suffer, with respect to the use of their own language, especially in formal or semi-formal situations, a discomfort or malaise that can only be described as a mild form of anxiety neurosis.

Neurotic behavior is what we all exhibit when confronted with a problem situation that appears to us insoluble. One way of avoiding neurosis is to avoid the situations that bring it on. When avoidance is impossible, we are put into a state of more or less acute tension and anxiety—and the tension and anxiety make us still less capable of solving the problem. In such a condition we exhibit unnatural, awkward, or inappropriate behavior; sometimes we are reduced to paralysis.

The task of speaking, and especially writing, 'correct English' induces all these reactions. Most people avoid the task of writing altogether through the use of the telephone, the printed greeting card, and the prefabricated Western Union message; others avoid it by having their secretaries write most of their letters and all their speeches for them. But for our students in freshman composition, avoidance is impossible, except for those who can get their friends or

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their parents to write their themes for them. Therefore they write—and as we all know from years of reading freshman themes, the majority exhibit in their writing unnatural, awkward, and inappropriate linguistic behavior; many, on being told to write, are reduced to paralysis.

I vividly remember a student of mine, an elementary school teacher, who, when asked to write a theme in class, went into a more than usually acute anxiety state. In the course of 50 minutes, she wore four or five holes in the first two lines of her sheet of paper with repeated erasures; she chewed an eight inch pencil down to two inches; she displayed the classic psychosomatic symptoms of anxiety: trembling, flushing, and sweating. At the end of the period there was nothing on her paper but the marks of erasure and a large moist blur of sweat where her hand had been. Every teacher of English is able to recall similar instances. We have all experienced, too, the embarrassed silence that occurs among many social groups when they find that an English teacher is in their midst, and I am sure we have all felt the need to publicly split an infinitive or two in order to dispel that anxiety. I mention these familiar experiences in order to underline the fact that, in linguistic as in other behavior, when people do not know how to act and cannot figure out how to discover how to act, and when previous attempts to act appropriately have repeatedly been met with failure or censure, the result cannot but be some kind of anxiety state. Just as the old-fashioned, two-valued morality of absolute good and absolute evil was charged by Dr. Oliver Wendell Holmes to be a contributory cause of mental illness—an observation deeply confirmed by psychiatric science many decades later—so does it now appear that the old-fashioned, two-valued grammar of 'correct' versus 'incorrect' English is a contributory cause of the more or less grave linguistic neuroses that most people suffer from.

THEORETICALLY at least, since the work of Jespersen and that of such American scholars as S. A. Leonard, Hanley, Fries, Kurath, Perrin, Markwardt, Pooley, and others, the traditional two-valued prescriptive grammar has been completely overthrown; so far as I am aware, it no longer has support in serious linguistic circles. We are all familiar with the relativistic ideas such as modern linguists have advocated: the observation of usage, the observation of distinctions between levels of usage, and the making of grammatical and linguistic decisions not on the basis of authoritarian apriorisms, but on the basis of knowledge of the actualities of accepted linguistic practice in the precise social contexts in which decisions are called for. It is clearly implied throughout the writings of modern linguistic scholars that the good speaker or writer of English is far from being the person who has memorized a large number of prescriptive rules of traditional grammar; he is rather one who speaks or writes with few anxieties or none, since, with more than one level of usage at his command and with a trained capacity to observe other kinds of usage, he has within him the resources

to learn, to make his own decisions, and to find his own way as he goes along. I do not believe that it has been pointed out before that this description of a good writer or speaker is closely analogous to the psychiatric description of emotional health and maturity: namely, the flexibility to adjust to many kinds of social and emotional situations, the ability to observe and to learn, and a strong enough confidence in one's own observations and insights and inner resources to enable one to make his own decisions and find his own way as he goes along.

HAVING PURSUED the analogy between psychological and linguistic well-being thus far, let us pursue it further and see what it implies to us in the teaching of English. What, from a psychological point of view, are we doing in traditional composition courses that discourages or inhibits linguistic maturity, and what should we be doing instead?

First of all, it appears to me that the usual freshman English theme is bad not because the student is ignorant, but because 'writing a theme' is, as normally practiced today, an impossible and artificial communicative situation. The freshman has to write a paper, sometimes on a subject not of his own choosing, often with little assurance that his reader is at all interested in what he has to say, and always with the knowledge that whatever he writes is going to be met with a hostile and critical eye bent on detecting not only his errors of fact or opinion (which he might conceivably correct) but his errors of spelling and grammar and diction, which are judged by a set of rules which appear to him (as they do to more learned students of language) entirely arbitrary and capricious. If you are talking to someone who intently studies the movements of your Adam's apple instead of listening to what you have to say, you will become so uncomfortable and self-conscious that you will soon find yourself stammering.[1] Most freshman themes are written under equally trying conditions, namely, in the knowledge that the incidental and even unconscious mechanics of the communicative act are going to be much more closely attended to than the content. No wonder, then, that the average freshman writes uneasily and self-consciously. I venture to say that more than half the errors that we redpencil in compositon exercises are not errors of ignorance, but errors of unnaturalness, self-consciousness, and artificiality, arising from the distrust of their *Sprachgefuehl* which has been induced in them by their previous instruction in English.

MY MAIN SUGGESTION is, then, that students in freshman English write, not for the teacher, but for each other. Fortunately, dittoing machines and opaque projectors make it easy for students to read each others' themes. The merits of a theme should be judged, not by the teacher, but by classmates, with

[1] See Chapter XVII, 'The Indians Have No Word for It: The Problem of Stuttering,' in Wendell Johnson's *People in Quandaries* (New York: Harper, 1946), in which the fear of stuttering is shown to give rise to stuttering.

the teacher acting only as chairman. Disputed usages should be disputed by the class, with the teacher doing no more than providing such background concepts as the determination of correctness by the observation of usage, the different levels of usage, the differences between spoken and written English, and the differences in degrees of formality demanded by different social situations.

Another basic notion that should be employed is the semantic distinction between the two major functions of language. Language first of all communicates something; secondly, through idiosyncrasies of grammar, spelling, diction, or pronunciation, it reveals something about the social status of the speaker. The former is by far the more important function of language, of course, since the content of a statement is the purpose of most communications. Students should be given complete freedom to make their own evaluations of the merit of the content of a paper. If a theme giving instructions on how to clean the ignition points of an automobile enables a reader to perform the process, the communication must be regarded as a success, even if the spelling, punctuation, and grammar are considerably short of 'standard.' The student will be found to be a better judge than the teacher of the success of a communication by this criterion.

This kind of communicative success is rarely recognized by English teachers, or recognized too fleetingly to do the student any good. Engineering and technical students often write papers that communicate adequately in this sense, but they are so often given low grades for mechanical errors that they come away with the conviction that they 'cannot write.' This conviction, of course, makes ensuing papers even more difficult for the student. Few English teachers seem to realize that if, as the result of reading a student paper, a reader who couldn't clean ignition points is enabled to do so, the essential purpose of communication has been already accomplished, and that the remaining concerns of grammar, spelling, and punctuation are largely a matter of the proper cutting and placing of the paper panties on one's mutton chop.

But the success of the content of a paper immediately raises, in the student's mind no less than in the teacher's, problems of linguistic propriety. Publication, even the modest form of publication made possible by a projector or dittoing machine, *automatically* brings into play the student's own feeling for the need for some kind of linguistic decorum. I have found that students fear the ridicule and censure of their classmates far more than they fear low grades from a teacher. In trying to solve for himself the problems of linguistic decorum, a student may begin systematically to observe the usage among people of different social levels in his own community and the usages he finds among the newspapers, magazines, and books he has contact with. As students begin to compare and discuss the different standards of propriety in the different social classes and linguistic contexts they encounter, it can be suggested by the teacher that the students work out their own manual of style, appropriate to their own writing situation in the college English class. For this purpose, the teacher may serve as

a guide, but not as a law-maker. A variety of handbooks giving conflicting rulings should be made available to students so that they may choose the forms that seem to them most appropriate.

Sometimes, inevitably, students will arrive at a ruling that differs from standard literary practice: let us suppose that a class decides by majority vote to eliminate the apostrophe from 'don't' as a uniform practice in their themes. This will do no harm, for no student who takes part in that decision will be unaware thereafter of the fact that some people believe the word should have an apostrophe, and each will be able to decide, depending on the writing situations he encounters, whether or not to use it.

As an aid in developing the capacity for linguistic observation it might be well to create a very much modified and adapted form of the linguistic atlas questionnaire by means of which the student can investigate the actualities of popular speech in his own social class and geographic area.[2] The usual result of English instruction, especially in immigrant, lower-class, and Negro areas, is to leave the student feeling that he shouldn't speak the way he does and can't speak the way he ought to. If, however, even a little of the scientific practice of investigating regional differences of dialect were introduced to the student, he would begin to discover, almost without being told, which of his locutions are limited to specific classes or localities and which are more generally accepted. With that knowledge there also arises the curiosity as to what the range of alternative locutions for particular meanings might be. Instead of being left to feel, as he often is now, that the only way to linguistic salvation is to memorize incomprehensible rules which, even when learned, are impossible to apply, the student gets from this training in observation the feeling that he can learn other dialects of English (including those more socially acceptable than his own) by listening and observing closely enough.

A REORGANIZATION of freshman composition such as I have sketched will, I believe, make the writing of themes a more natural exercise in communication than it is now. In ordinary life, our communications stand or fall by the judgment of our readers. The good writer is one who can predict accurately the semantic reactions of his readers so that they laugh when he intends them to laugh, are touched when he intends them to be touched. The poor writer is one who cannot predict the reactions of his readers so that they laugh in the wrong places and fail to be touched at all. In the traditional theme-writing exercise, the theme is written only for and read only by the instructor, and the student-writer is expected to write well without having the education or back-

[2] The Linguistic Atlas of the United States and Canada is a large-scale research project into geographical differences in dialect among English-speaking people in America. Most of the inquiries into vocabulary and pronunciation are conducted by questionnaire. See Hans Kurath, *A Word Geography of the Eastern United States* (Ann Arbor: University of Michigan Press, 1949).

ground to be able to predict his reader's semantic reactions. But if the student writes for his fellow-students, he writes for a known audience. When his fellow-students discuss his paper in class, he can observe the respects in which he has failed to produce the desired effects, and he can make the necessary changes. Also under such a system he shares in the process of determining the rules for linguistic propriety; the teacher and the handbook become sources of information and guidance and cease to be authorities from on high.[3]

I should go so far as to recommend that the grading be done by students. The last time I made this suggestion publicly, I remember the grim fervor with which an elderly lady English teacher cried, 'Never!' I was reminded of common reactions toward proposals that disturbed and delinquent children be treated by progressive, psychiatric methods. When the methods are described—self-government among the children, minimum adult direction, the abolition of adult-imposed punishment—the usual response of the psychologically naive is to say, 'Never! Not with the little hoodlums we have to deal with!' But no matter how bad the little hoodlums are, as modern psychotherapists are demonstrating, children even of the seriously disturbed kind are able to socialize each other and develop among themselves self-government and self-discipline. The desire for linguistic propriety, which is only part of a more general desire to be acceptable to one's community, must be seen to be a natural growth development. However, this natural tendency towards linguistic growth is inhibited and subverted, as is the process of socialization among neurotic children, by anxieties and fears. Our profession, with its authoritarian methods and (so far as the majority of us still is concerned) its two-valued prescriptions of linguistic good and evil, is the chief instrument by means of which linguistic anxieties and fears are created and perpetuated—anxieties and fears which leave a large portion of our population frightened of their mother tongue.

Those who share the views on usage of modern linguistics have long deplored the fact that their scientific opinions seem difficult, often impossible, to translate into practical classroom terms. This is not only because, as Professor Paul Roberts recently remarked, the great majority of English teachers still seem to believe that correct English is the joint product of God, Reason, and Richard Grant White. It is also because the structure of the traditional theme-assigning and theme-writing situation puts English teachers, in spite of themselves, into the role of authorities, so that the demand for authoritarian pronouncements continues unabated in spite of the fact that many of them, as linguistic scientists, hold thoroughly unauthoritarian views on 'correct usage.'

[3] The reader acquainted with current trends in psychology will hardly fail to notice, I am sure, the degree to which the point of view presented here coincides with the theories of 'nondirective' or 'self-directive' counseling (and teaching) proposed by Carl R. Rogers and his associates, and with the theories of group interaction now being tested by the Research Center for Group Dynamics at the University of Michigan. I am indebted to both these schools of thought for sharpened insights into the learning process.

With a change in the structure of the theme-writing situation— and I have suggested only one of many possible changes—the concepts of modern linguistic science will have a chance to operate in composition courses.

ENGLISH COMPOSITION is a necessary course in any high school or college curriculum. It will become a vital and more useful course when the tasks it requires and the ways of evaluating success in the performance of those tasks bear a closer resemblance than they now do to the conditions under which writing is produced and evaluated in the world outside the classroom. If the student is trained, in such ways as I have suggested, in linguistic observation; if he is not alienated from his *Sprachgefuehl;* if the course of training he receives increases his confidence in his ability to solve his own linguistic and stylistic problems as they arise, we send him out into the world equipped with the orientation he needs to become a good writer or speaker. Such encouragement of self-guidance and self-maturation seems to me to be psychologically sound as well as consistent with the principles of scientific linguistics.[4]

[4] Some teachers on hearing this paper have remarked that the foregoing proposals, while probably useful with advanced composition classes, could hardly be applied to poorer students. Actually, the teaching techniques here described were evolved specifically to meet the problems presented by the poorer students of the kind found in 'remedial writing,' 'subfreshman,' and 'repeater' sections of the college freshman English course.

In one freshman English course I know of, it was felt some years ago that the students 'weren't learning to write.' It was decided, therefore, to 'drill them in fundamentals' of grammar, spelling, and the like, and to give up fancy notions such as the study of the modern novel, the Great Books, or semantics. After a few semesters of 'fundamentals,' it was discovered that the students still 'weren't learning to write' — in fact, the condition seemed to be getting worse. It therefore seemed apparent that the students had to be drilled in *even more fundamental* fundamentals. But still the students turned in miserable themes.

In the course of a decade, the freshman English course at this institution has become more and more and more elementary, until it is now at about the level of the Sixth Grade. I keep wondering what the outcome will be. Will they eventually give up the teaching of composition as a bad job? Or will they persist in their course until they have the whole freshman class sitting on the floor playing with alphabet blocks?

THE NERVOUS SYSTEM AND GENERAL SEMANTICS

*IV. The Fiction of the Thalamus as the Neural Center of Emotions**

RUSSELL MEYERS, M.D.

FROM ITS INCEPTION general semantics has had a close affinity with neurology and psychology. This is shown by the adoption by general semanticists of of such terms as 'neuro-semantic mechanisms,' 'neuro-symbolic processes,' 'neuro-linguistic environment,' 'neuro-evaluational factors,' and in frequent announcements to the effect that general semantics '. . . is concerned with the linguistic and semantic mechanisms which function in human nervous systems to condition our knowledge, activities and adjustments in life.' (40) Indeed the very title, *Science and Sanity,* under which the formulations of general semantics were first systematized, clearly announced Korkzybski's intention to integrate the data and constructs of the newly-founded discipline with those of the neurologic and psychologic sciences.

As part of the broad program of working toward the unification of all sciences, this 'intellectual tropism' is to be warmly endorsed. But if semanticists would spare themselves years of barren groping, perplexity, and embarrassment and avoid that devastating nervous disorder designated by Johnson (35) the IFD

* The previous articles in this series are 'I. The Aims of General Semantics and the Method of Science,' *ETC.* 5.231-245, Summer 1948; 'II. "Reality" and "Unreality,"' 6.27-38, Autumn 1948; 'III. Perceptual Response and the Neurology of Abstraction,' 6.169-196, Spring 1949. Dr. Meyers is Professor of Surgery in the College of Medicine, State University of Iowa, and Chairman of the Division of Neurosurgery, University of Iowa Hospitals. The present article is expanded from materials presented before the Chicago members of the International Society for General Semantics, February 13, 1948; the seminar on general semantics in Chicago, April 29 and May 6, 1948; and the Third American Congress on General Semantics, Denver, Colorado, July 23, 1949. A fourth communication, 'The Proprioceptive Mechanism and the Perception of Matter, Space, Time, and Energy,' was originally planned for this issue. The decision to defer it in favor of the present article was prompted by numerous requests for the material on the thalamus presented at the Denver Congress.

disease,[1] they need to take stock of the numerous semantic difficulties that inhere within the aristotelian language of current-day neurology and psychology. Unless such is done, constructs of dubious validity are certain to be unwittingly embodied within general semantics, there to weaken its structure and render it vulnerable to the first serious onslaught by informed critics.

In the present communication the writer invites attention to a construct currently employed by many neurologists, psychologists, and psychiatrists and seemingly accepted on blind faith by large numbers—perhaps the great majority—of general semanticists: the twin notion that the thalamus is 'the center of emotion' and the cortex, especially that of the frontal lobes, 'the seat of the intellect.' He proposes to demonstrate the dubious grounds on which this elementalistic dichotomy rests and to urge upon his colleagues the necessity of exercising caution lest this prescientific proposition, the chief virtue of which is its engaging simplicity and teachability, become too firmly entrenched.

II

THE PRINCIPAL ISSUES with which the writer is concerned may be pointed up by quoting a few random selections from the first edition of *Science and Sanity* (43) in which statements like the following are quoted with apparent approval:

> . . . it is well to distinguish a second characteristic of nervous organization which renders it an organization in levels. (p. 151) The thalamus is a center of affective reactivity to sensory stimuli, while the cortex is an apparatus for discrimination. (p. 268) We are dealing here with types of associative reaction peculiar to the cortical system, correctly opposed to the unqualified affective reactivity of the thalamus. (p. 369)

These notions having been enunciated, so to speak, *ex cathedra,* were promptly and enthusiastically reiterated by many who followed Korzybski. Thus, one consulting psychologist (80) proclaimed,

> I have found Korzybski's cortico-thalamic formulations to be of immense value. . . . I put him [the patient] to work on his own problems, rewriting his 'thalamic' outburst about his wife's 'past' in extensional terms of what had actually happened. . . . I have people write about these hurts, sprinkling their writing with dates and indexes and substituting terms with no 'thalamic' associations. . . . I have them do this until they can talk to me and themselves with no noticeable 'thalamic' upset.

[1] Wendell Johnson considers that the genesis of many mental disturbances is as follows: 1. For one or more reasons the individual adopts and strives toward a number of IDEALS (I) which, in view of his limitations, are excessively high and therefore unattainable or which, in view of their ill-defined character, are incapable of recognition even if attained; 2. Such strivings lead to repeated FRUSTRATIONS (F); and 3. Growing awareness of frustration eventually leads to DEMORALIZATION (D)—a psychophysiologic state which becomes overtly expressed as the signs and symptoms of personality disorder.

A marital counsellor (53) similarly writes,

> . . . I convinced him [Mr. Z.] that if he wanted to relieve the 'emotional' congestion in the thalamic region he might do so by delaying his reactions, *i.e.*, by making his impulses travel the longer circuit through the 'cortex'. . . . If by careful analysis these symbols can be made conscious and free, from 'emotional' overloading by 'straining them through the cortex' so that short circuiting is stopped and the 'thalamic congestion' relieved, the results are salutary and the marriage has a chance to survive.

The following is from a recent article (64) intended to elucidate the characteristics of 'extensional behavior'.

> For example [an extensional person] will not regard children as small adults, because a little checking of the territory as represented by the children, will reveal that they are unable to behave like adults, because they function mostly on a thalamic level since their cortexes are not fully developed.

Unfortunately, neither Korzybski nor certain of the authors quoted by him (*e.g.*, Henri Piéron) had sufficient training in neurologic science to permit rigorous evaluation of the data from which these elementalistic propositions were originally derived. Nor are they to be unduly censured. Many others whose backgrounds in neurophysiology and related disciplines were sufficient to have enabled them to detect the insubstantial character of these concepts embraced them without reservation. In such instances, failure to employ general semantics principles appears to have been responsible, rather than insufficient training for evaluating the clinical and experimental data.

The fact is that much of modern writing in neurology, psychology, psychiatry, anthropology, philosophy, and the social sciences is permeated by references to *cortical* and *thalamic levels of function* and their alleged roles in the *intellectual* and *emotional* life of the individual. While such references are sometimes explicit, they are far more frequently made by implication; being both unvoiced and unidentified, they carry a high potential for fouling up lines of communication among serious students.

III

OUR PROBLEM may be stated thus: to what extent does the available evidence warrant the assertion that the thalamus or any of its parts, such as the paleothalamus or hypothalamus, is the dynamic source or seat of 'emotional experience' and the cerebral cortex the 'center of the intellect'?

Upon first encounter it might seem a relatively simple task to reach an answer to this question. Sober reflection, however, soon points up some formidable difficulties, not the least of which spring from certain hidden assumptions upon which the more manifest propositions themselves depend. These may be identified as follows: (a) the concept that the nervous system functions in terms of

'levels'; (b) the implication that 'emotion' is a phenomenon sufficiently distinct from 'intellect' (or 'intelligence') to leave no doubt as to which is under inquiry at any given moment; (c) the concept that brain 'centers' genuinely exist as circumscribed anatomic correlates of neural functions; (d) the concept that consistent and objectively verifiable distinctions exist between 'visceral' and 'somatic' organs within the body in general and between the 'autonomic' ('sympathetic') and 'cerebrospinal' divisions of the nervous system in particular; and (e) the belief that verifiable differentiations exist between the 'voluntary' and 'involuntary' activities of the organism and that 'intellectual' functions are by nature 'willed' whereas 'emotions' are by nature 'involuntary' affairs. In almost all serious discussions of the matter, these occult assumptions sooner or later emerge. For this reason, they are relevant and cannot properly be separated from our inquiry.

Desirable though it may be, we cannot here enter upon an exhaustive inquiry into all the hidden assumptions identified above. An extended examination of the concepts of brain 'centers' and 'voluntary' and 'involuntary' activity must be deferred for a later article of this series. In the present paper we shall confine ourselves to the most pertinent material only, recognizing that even in this much must be left unsaid.

IV

THE CONCEPT OF 'LEVELS.' The principal theme of this doctrine is that the nervous system has acquired in the course of phylogenetic development successive 'levels' of control such that under ordinary circumstances a 'higher' level regularly exerts an inhibitory influence over functions residing within or mediated by the next 'lower' level. The propositions concerning cortical and thalamic functions with which we are concerned are but a special case of this broader concept.

According to the 'level' doctrine, the neocortex of the cerebral hemispheres—the nervous system's most recent acquisition—now constitutes the 'highest' level and as such is the major source of inhibition of the next 'lower' levels, namely, the corpus striatum and the 'emotionally-charged' thalamus. In turn, the corpus striatum and the thalamus are supposed to exert inhibitory influences over sensory and motor patterns mediated at still 'lower' neural levels—*e.g.*, the *substantia nigra, nucleus ruber, corpus subthalamicum, formatio reticularis,* and certain other nuclei of the anterior mid-brain. The latter in their turn are conceived of as inhibiting certain nuclei in the medulla; and so on down to the 'lowest' pools of sensory and motor neurons in the brain stem, spinal cord, and sympathetic ganglia.

The doctrine was formulated in 1876 by Hughlings Jackson who asserted that contemporaneously with the loss of function of a center there is a rise in activity of the next 'lower' center. The centers of the 'lower' physiological level seemed to Jackson (34) to be 'considerably independent of the directive infl-

ence of the higher levels, although much under their negative inhibitory influence.' The 'level' theory has undoubtedly served a useful role in furthering comprehension of the nervous system in health and disease. However, some of its more serious limitations and deficiencies have recently become apparent and new general formulations now appear to be in the making.[2]

Within the past fifteen years a number of significant observations not previously possible in human neurophysiology and physiologic psychology have been made incidental to (i) psychosurgical procedures used in the treatment of psychotic and psychoneurotic states and (ii) surgical procedures directed against certain clinical disorders (*e.g.*, paralysis agitans, hemichorea, -athetosis and -ballismus) characterized by excessive movements. While much ground yet remains to be cleared, inferences arising from such observations are rapidly compelling a critical re-examination of the conventional 'level' doctrine. The ultimate necessity of this was foreseen some years ago by Lorente de Nó (45) and others.

(i) *Psychosurgery.* The operation of prefrontal lobotomy (leucotomy) was introduced by Egas Moniz (65) of Lisbon in 1935. In essence, it consists of interruption of the subcortical white matter of both frontal lobes at a level just in front of the anterior horns of the lateral ventricles (Fig. 1a). The most salutary effects appear to be obtained when the fibers running through the medial and inferior portions of the frontal lobes are severed.[3]

In attempting to explain the salutary results of psychosurgery, clinicians have frequently contended that in the psychologically aberrant subject the thalamus, as the 'center of emotions,' has somehow gained ascendancy over the frontal cortex and is unduly 'driving' it:

> Above all, there is the emotional component which invests the symptoms and the ideas with a disabling force and completely prevents the

[2] In this respect, the 'level' concept is comparable to euclidean geometry, newtonian mechanics, the 'telephone theory' of nervous function, and numerous similar scientific formulations which have been and still remain useful in limited frames of reference but which can no longer be regarded as the touchstones of comprehension they were once thought to be.

[3] Several modifications of the original operation have been devised in the endeavor to minimize the undesirable side-effects on the patient's post-operative personality, to improve the over-all results, and to make the operation accessible to the large numbers of patients who might profit from it. These include Pool's (70) cortical topectomy (extirpation of Areas 9 and 10 of the cortex, bilaterally); Penfield's (69) gyrectomy (removal of various gyri of the prefrontal and promotor regions); Scoville's (82) undercutting of the cerebral cortex of the mesial surface of the frontal lobes (especially areas 9, 10, 24 and 32); the thalamotomy (destruction by electrocoagulation of small areas in the dorso-medial nucleus of the thalamus) of Spiegel, Wycis *et al.* (85); and Fiamberti's (23) transorbital leucotomy (section of the frontal lobe through the roof of the orbit). Up to the present time, over 6,000 patients have been subjected to one or more psychosurgical procedures. As a consequence, a fair estimate of what can and cannot be accomplished may now be said to have been reached.

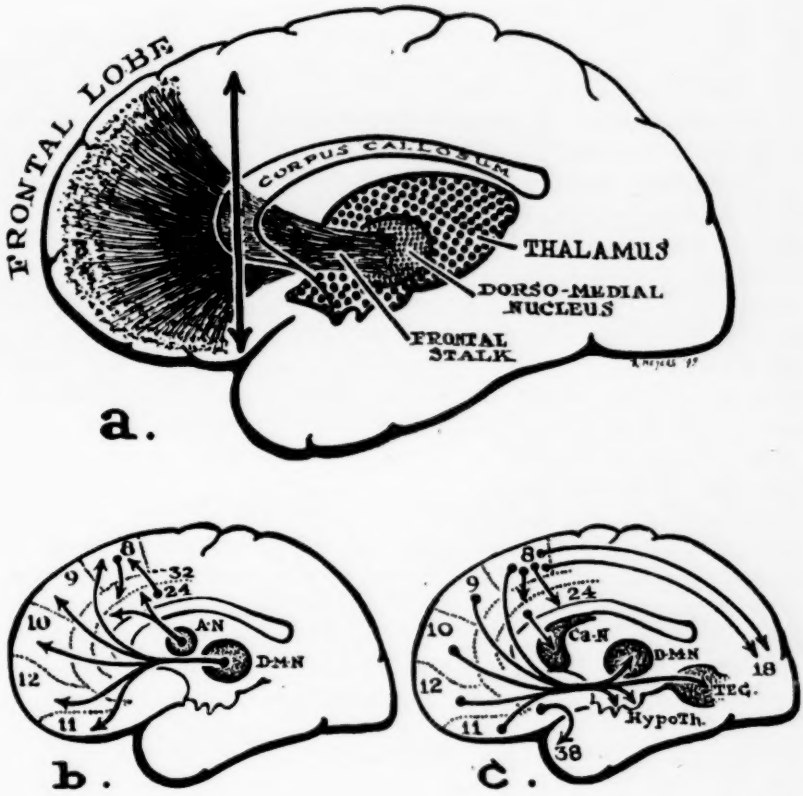


FIGURE 1. PRINCIPAL ANATOMIC CONSIDERATIONS IN PSYCHOSURGERY. (a) Line of incision (arrow) employed in the 'standard' prefrontal lobotomy. The frontal stalk transmits, among others, fibers coursing between the dorso-medial nucleus of the thalamus and the frontal lobes. These, together with various other neurons, are severed. (b) The better-known fibers coursing from the thalamus to the frontal lobes. (c) The better-known fibers coursing from the frontal lobes to the thalamus and other subcortical nuclei. A.N = anterior thalamic nucleus; Ca.N = caudate nucleus; D.M.N = dorsomedial thalamic nucleus; Hypoth. = hypothalamus; TEG. = tegmentum of brain stem; 8, 9, 10, 11, 12, 18, 24, 32, 38 = Brodmann's cyto-architectural areas of cerebral cortex. Figs. b and c modified from W. E. Le Gros Clark, *Lancet*, 1:353, 1948)

> patient's adaptation to the realities of existence (25). Inasmuch as the thalamus is generally regarded as the center of emotion and is largely responsible for the feeling tone which accompanies ideas, interruption of the pathways between the thalamus and the frontal lobes is desirable if the emotional component of ideas is to be reduced (22). Sectioning the fiber bundles from the frontal lobes . . . produces alteration in emotional responses by disrupting ideational with affective experiences (77).

Presumably, then, favorable results are accomplished by cutting the pathways which run from the thalamus to the frontal lobes (the thalamo-frontal fibers).

Unfortunately, a number of stubborn facts preclude unreserved endorsement of this account. For one thing, we are left wholly in the dark concerning the psychophysiologic dynamics by which the thalamus gains ascendancy over the frontal cortex. Until at least some direct evidence favoring this pathogenetic postulate is adduced, it seems wise to withhold endorsement. Assuming for the moment, however, that the circumstances are as stated, the 'level' doctrine runs into serious difficulty; for while it is true that thalamo-frontal pathways are cut in the course of operation, it is equally true that fibers running in the opposite direction, *i.e.*, from the frontal lobes to the thalamus (fronto-thalamic pathways), are also severed (Fig. 1, b and c). Now, in terms of the 'level' doctrine, the fronto-thalamic fibers are presumably the major agents through which the frontal cortex exerts its 'normal inhibitory effect' upon the thalamus (18). It must be apparent, however, that the interruption of these fibers would inevitably throw the burden of thalamic control onto those portions of the neocortex which still remain after operation, namely, the parietal, occipital, and temporal cortices. But if the latter were insufficient in the first place to dampen thalamic 'drive,' it is difficult to see how surgical interruption of fronto-thalamic fibers could *improve* the situation. Here is a circumstance in which it becomes very difficult to reconcile the 'level' theory with factual observations.

There are other difficulties, to some of which the writer (60) has previously called attention: even when psychosurgery is carefully restricted to those types of psychologic disorder in which experience shows that benefit may be realizable, operation fails to accomplish its aim in a disappointingly large proportion of cases—20 to 60 per cent, depending upon the particular psychiatric disorder dealt with (25). Equally difficult to explain is the fact that in a considerable number of patients in whom a gratifying rehabilitation has been achieved and maintained for upwards of a year following operation, disheartening relapses develop. Why, if the 'level' doctrine holds valid, should this be so? Certainly, no account which invokes *regeneration* of the severed pathways merits serious attention, since from all information now at hand such does not occur within the human central nervous system. As a matter of fact, no theory which assumes that the thalamus is *the* 'seat of emotion' can satisfactorily accommodate the stubborn facts of clinical failures and relapses.

The 'level' doctrine encounters yet another difficulty when invoked to explain

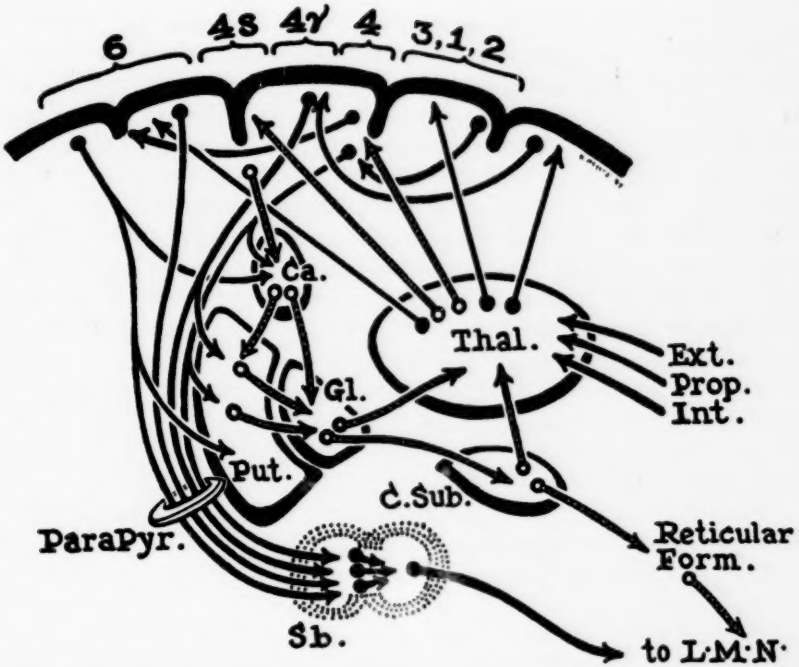


FIGURE 2. DIAGRAM ILLUSTRATING A 'REVERBERATING CIRCUIT' THEORY OF NORMAL NEURAL FUNCTION. Two circuits are shown: (a) a *kinetic circuit* which, acting unopposed, produces abnormal movements (in this instance, hemiballismus) of the opposite half of the body; (b) a *suppressor circuit* which phasically complements and suppresses the showers of *kinetic impulses*, so that the latter merely contribute to normal muscle tonus. Neither circuit can be said to be 'higher' or 'lower' than the other.

The structure of the *kinetic circuit* (black lines) is as follows: Impulse 'input' is derived from exteroceptive (Ext), proprioceptive (Prop) and interoceptive (Int) sources which project from the periphery of the body onto the thalamus (Thal). The impulses pass from the thalamus to the postcentral (3, 1, 2) and precentral (4, 4γ) cortex and then run forward by way of subcortical 'U'-fibers to the premotor cortex (6). Area 6 also receives impulses directly from the thalamus. Impulses leave the cortex by way of parapyramidal fibers (ParaPyr), pass to certain subcortical nuclei (Sb) and are then relayed to the lower motor neurones (LMN). Here motor responses (constituting the 'output') result in further excitation of extero-, proprio- and interoceptors. The latter then play back upon the thalamus, thus completing the circuit.

The structure of the *suppressor circuit* (black lines, white dots) is as follows: As in the kinetic circuit, the 'input' of the suppressor circuit consists of impulses reaching the thalamus from the periphery. From the thalamus they are relayed to the cortical 'suppressor strip' (4s). They leave the cortex and pass *via* parapyramidal pathways to the caudate nucleus (Ca) and putamen (Put) whence they play upon the globus pallidus (Gl). Two pathways from the pallidum to the thalamus are now employed: one *via* the fasciculus lenticularis and the other *via* the pallido-subthalamic bundle and the corpus subthalamicum (C. Sub). The 'output' of the suppressor circuit consists of fibers coursing from the corpus subthalamicum to the reticular formation (Reticular Form) of the brain stem, whence impulses reach the lower motor neurons *via* extrapyramidal paths.

why psychosurgery fails to improve certain psychologic disorders in which impulsive, 'emotionally-charged' components are no less apparent than in the disorders generally considered amenable to such operations. Particular reference is made to 'constitutional psychopathic personality—emotionally-unstable type' and to hebephrenic schizophrenia. Finally, lobotomized patients are in no sense characteristically lacking in those forms of behavior commonly designated as 'emotional.' Some show far more aggressiveness after operation than is desirable (25). Nor are they seriously lacking in the capacity to exhibit 'intellectual' behavior (24). Indeed, in some instances these patients are capable of such seemingly 'normal' performances on standard I.Q. tests that their psychologic deficits can be demonstrated only by the use of special tests like those recently devised by Halstead (29, 30) and Rylander and Sjöqvist (79). Clearly, the 'level' theory needs much bolstering if it is to meet these difficulties.

(ii) *Surgical Procedures Directed Against the Hyperkinetic Disorders.* Observations from this source, like those from psychosurgery, reveal certain clues that may ultimately lead to a more substantial concept than the conventional 'level' doctrine of how the nervous system works in health and disease.

For some time it has been known that certain tremors and other abnormal movements seen in such disorders as paralysis agitans, hemichorea, -athetosis and -ballismus develop in consequence of lesions in the corpus striatum and/or upper midbrain, including the substantia nigra and corpus subthalamicum. Interpreted in accord with the 'level' theory, such lesions disrupt the ability of the level(s) in which they are located to exert their customary inhibitory control over 'lower' levels, the result of which is that the latter become free to express their inner (?) impulses to abnormal movement.

With the advent of operative procedures directed against the hyperkinetic disorders, it has been demonstrated by several independent workers that surgical interruption of levels 'higher' than those damaged by the disease process may be followed by gratifying abolition of the abnormal movements. In this connection, Bucy and Buchanan (9), Bucy (10) and Putnam (73, 74) have extirpated the cortex of Areas 4 and 6; Browder (8) has sectioned the anterior limb of the internal capsule; and the present writer (56, 57, 58, 63) has extirpated and/or sectioned various structures in and about the corpus striatum and 'motor' cortex. In view of these and closely related subhuman studies (55), there has begun to emerge in place of the 'level' concept a new doctrine of the structural pattern of neural functions—that of the reverberating or 'feed-back' circuit. Bucy (11) has elaborated one such theory to account for the tremors of paralysis agitans and another for choreo-athetosis. The present writer (63) has recently proposed a reverberating circuit theory of the pathogenesis of hemiballismus, an illustration of which appears in Fig. 2.

That inhibitory influences may be exerted in a direction quite the reverse of that conceived in the traditional 'level' doctrine has recently been disclosed by

Magoun and Rhines (47, 48). These investigators discovered in the reticular formation of the medulla a region which, upon being stimulated, inhibits activities not only at 'lower' (spinal) levels but also at 'higher' (cortical) levels. They believe that this represents a physiologic as well as an experimentally inducible phenomenon (Fig. 3).

In his numerous attempts to comprehend the 'unknowns' of his universe, man has habitually resorted to analogies with what is already familiar to him. It is no accident, for instance, that the 'telephone' concept of nervous functioning (68, 71) was evolved at a time when the modern telephone system was being developed. The more serious deficiencies of the 'telephone' theory, especially its dualistic and demoniacal implications, have only recently become apparent. Had the radio anteceded the telephone as the early means of communication by wave

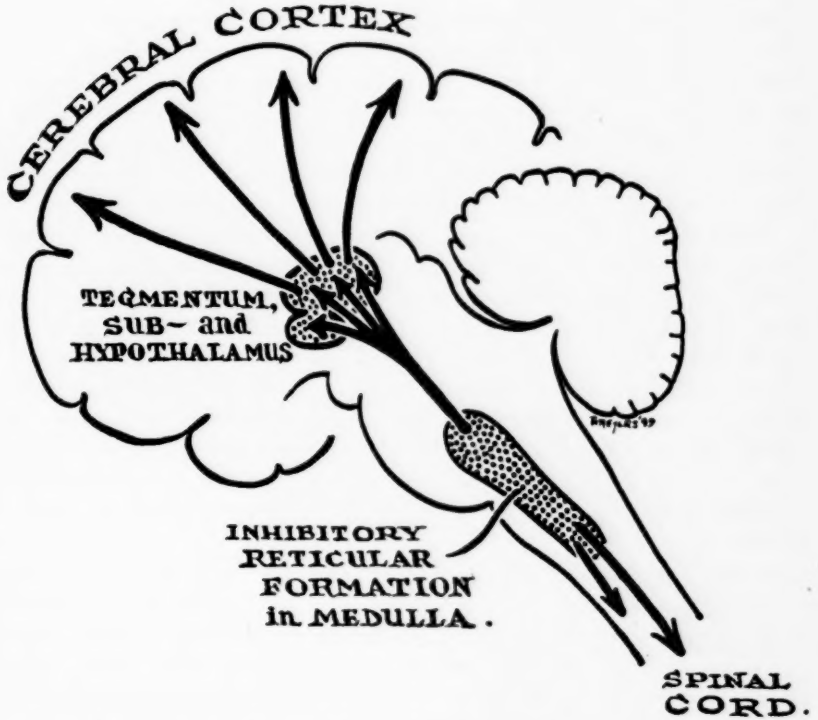


FIGURE 3. EXAMPLE OF A 'LOWER' NEURAL LEVEL EXERTING AN INHIBITORY INFLUENCE OVER A 'HIGHER' LEVEL. Magoun and Rhines have recently identified a diffuse aggregate of cells in the reticular formation of the cat's medulla which, when stimulated, exerts an inhibitory effect not only upon spinal cord mechanisms 'below' it but also, by way of certain subcortical nuclei in the tegmentum, subthalamus and hypothalamus, upon widely represented areas in the cerebral cortex 'above' it.

transmission, it is probable that a wholly different concept of neural functioning would have been elaborated—one perhaps approximating our current ideas. The intimation is that future discoveries in areas seemingly remote from neurology may be expected to suggest still other analogies which will make our present notions seem archaic to another generation of investigators. But whatever such future developments may bring, it is clear that *for the reverberating circuit theory, the terms 'higher' and 'lower,' so essential to the conventional 'level' doctrine, have no more anatomico-physiologic meaning than the terms 'up' and 'down' as applied to interstellar and intra-atomic space.* The newer 'circuit' view has already proved accessible to mathematic, electronic, and general physical formulations (51, 52, 76, 88)—a circumstance that would be difficult or impossible to realize by strict adherence to the 'level' concept.

V

THE THALAMUS AND 'EMOTION.' The evidence from which the widely-held notion has been derived that the thalamus is the 'center of emotions' proves, upon critical examination, to be both meager and inconclusive. The relevant experimental and clinico-pathologic data recorded up to 1941 have been independently reviewed by Lashley (44), Rioch (78), and Masserman (50) and found gravely insufficient. Alpers (1) and Morgan (66) likewise rejected the notion as inconsequential to the understanding of clinical problems.

Experiments in direct stimulation of the thalamus were performed as long ago as 1887 by Bechterew (7) who described various circulatory and respiratory changes, vocalization, erection of the hair, and integrated movements of the limbs. In 1892 Goltz (28) reported that certain responses observed in the decerebrate dog resemble fear and rage, and similar observations were made on the cat in 1904 by Woodworth and Sherrington (91). An extensive and systematic inquiry into thalamic physiology was begun in 1909 by Karplus and Kreidl (38) and continued up to 1937. The latter experimenters applied faradic currents to the hypothalamus and subthalamus and were impressed by the resemblance of some of the motor reactions to the 'emotional' expressions reported by Goltz.

During the decade 1920-30, Dusser de Barrenne (20) and Cannon and collaborators (12, 13, 14, 15) observed that when the cerebral cortex of the cat is separated from the 'lower centers' and the animal is allowed to recover from anesthesia, short-lived activities resembling rage and fear occur. Philip Bard (2, 3, 4) localized the neural site of 'sham rage' in the cat in the hypothalamus and demonstrated that when the brain is severed at levels below the hypothalamus, such fragments of rage as are observable appear not to be 'welded together' in an easily recognizable pattern. Somewhat later, purring was observed in decorticate cats (6, 81). This expression of 'pleasure' was regarded as hypothalamic in origin by Gibbs and Gibbs (27). Further refinements in the

technic of stimulating the hypothalamus in unanesthetized cats permitted the demonstration of snarling, tail-lashing, erection of fur, dilatation of pupils, biting, clawing and fighting movements (36, 75). Bard (5) then showed that the 'hypothalamic animal' is capable of being sexually aroused and of performing coitus.

Taken altogether, these studies demonstrated beyond doubt the existence in the hypothalamus of nuclei and pathways which, when activated under artificial experimental circumstances, evoke chemical, glandular and motor responses resembling those seen in 'emotional' states.

But here the trail breaks off. Masserman (50) raised a highly pertinent issue when he asked whether such stimuli give rise to the actual *experience* of fear, rage, erotic feeling, etc. He pointed out that the observable motor reactions, while similar in some respects to those observed in rage, fear, etc., differ in many important ways from the affective responses seen in the intact animal. For example, the motor activity of 'sham' emotional states is not *directed at* specific objects in the environment; it is not *adapted to* the animal's surroundings (*e.g.*, readily available avenues of escape are altogether neglected); and it *ceases abruptly* upon discontinuance of the stimulus, leaving none of the subsiding 'emotional' reverberations seen in the intact animal. Masserman contended that the activity of the 'thalamic animal' no more denotes actual 'emotion' than does the contraction of a skeletal muscle as induced by stimulation of its motor nerve.

It is now possible to implant tiny electrodes into the hypothalamus of the intact animal. If, while such an animal is exhibiting a normal 'emotional' response—whether 'pleasurable' or 'unpleasant'—the electrodes are activated, the pre-existing behavior continues effectually unchanged unless mechanically interfered with by the motor components of the induced response. Again, when large bilateral lesions are produced in the cat's hypothalamus by electrocoagulation, the animal exhibits within one to three weeks of operation essentially normal 'emotional' responses to food, mice, dogs, erotic stimulation, etc. (5, 49). Finally, when such an experimental animal is stimulated electrically at neural 'levels' *alongside of* or *below* the hypothalamus, typical 'hypothalamic' responses may be evoked (though they are not as well organized and are in general more easily exhausted than in the animal with a non-damaged hypothalamus). It is significant that while the hypothalamus may and probably does function to facilitate or integrate the various *expressions* of 'emotion,' such expressions are demonstrable even when the hypothalamus has been extensively destroyed. *Apathy is not an enduring sequel of hypothalamic destruction.*

That direct stimulation of the hypothalamus induces emotion-simulating reactions but probably is not accompanied by the *experiential components* of fear and rage was suggested by Masserman's (50) failure to 'centrally condition' these pseudo-affective responses to an indifferent stimulus. This author concludes that there is little or no basis for the thesis that the hypothalamus 'governs' or

even mediates the 'emotional experiences' themselves. He considers it permissible to regard it as a re-inforcing and co-ordinating mechanism of *emotional expression*. Wheatley (87), approaching the subject from a somewhat different experimental viewpoint, announced that 'normal emotion is undoubtedly impossible' in the decorticate and high decerebrate animal.

In the clinical neurologic area, the authority of Head and Holmes (32) and of Déjerine and Roussy (19) appears to have provided the chief support for the doctrine that the thalamus is the 'emotional center' of the brain. Head's view was that the thalamus endows incoming somatic sensations with pleasurable or unpleasant qualities and that release of this 'emotional center' from cortical control following hemispheral brain lesions intensifies the emotional charge attaching to incoming sensations.

IN CONSEQUENCE of these and similar postulations, the thalamus has been variously credited with playing the following roles: (i) serving as the 'highest center' for the integration of moto-glandular patterns expressive of 'emotion'; (ii) initiating or facilitating nervous impulses which play upon and modify cortical processes so as to impart to them an 'emotional charge'; and (iii) providing a 'drive' which re-inforces and maintains behavior while the 'emotion' persists.

As to the first-mentioned role, attention has already been called to the fact that only *part* integrations of the complex somatic and visceral activities seen in 'emotion' are achieved in the 'thalamic' animal as compared with those seen in the intact animal. But *part* integrations are also accomplished in other portions of the nervous system. Hence, the thalamus cannot be considered unique in this respect. Bodily activities representing fragments of those often observed in 'emotional states' can be demonstrated by excitation of pathways in the cerebral hemispheres, a circumstance which seems to Kennard (41) to make it possible for the cortex *independent of the thalamus* to govern directly the manifestations of 'emotional reaction.' Furthermore, *part* integrations of so-called emotional patterns are also accomplished at midbrain (7, 39), medullary (91) and even spinal levels (4, 5, 21, 83). Since, as Rioch (78) asserts, there is no valid evidence that the *affective* and *sensory* components of 'emotion' are actually present in the 'thalamic animal,' the concept of the thalamus as an 'emotional center' lacks the experimental support that many have supposed it enjoys.

That there may be a wide disparity between 'emotional *experience*' and 'emotional *expression*' is richly attested to by clinical cases of pseudo-bulbar palsy in which the patient on slight provocation exhibits spells of crying or laughing. In this condition, some patients flatly deny that they feel sad when crying or happy when laughing (89). The introspective reports of some indicate that they remain relatively apathetic during an outburst whereas other sufferers report feeling chagrined, impatient, or otherwise distinctly displeased while they are

in the act of laughing. From such data it is clear that the dramatic outward expressions of 'emotion' do not necessarily correspond to the 'affect' experienced by the subject.

The second alleged role of the thalamus—that of initiating or facilitating nervous impulses which so modify cortical processes as to impart an 'affective quality'—was originally inferred by Head from the demonstration of hypersensitivity, sometimes amounting to intolerable discomfort, in portions of the body opposite the side of a 'thalamic' lesion. Head supposed that in his cases the thalamus was effectually isolated from the cortex. As a matter of fact, critical inspection of his anatomic data fails to verify his claims as to isolation of the thalamus from the cortex. But aside from this objection, similar subjective complaints of hypersensitivity are encountered in many other clinical cases in which the responsible lesions are located nowhere near the thalamus—*e.g.*, in cases of inflammation of the peripheral nerves, spinal nerve roots and spinal ganglia; and in injuries, degenerations, and tumors of the cauda equina, spinal cord, and medulla. Commenting on these facts, Lashley (44) asserts that 'nothing more than an abnormality of somesthetic sensation is indicated by the observations; certainly not a general increase in affectivity.'

The third role imputed to the thalamus, that of providing an 'emotional drive' or tension-impelling activity, appears the least tenable of all. It has already been remarked that in 'sham' emotions there is virtually no after-discharge, *i.e.*, that the emotional response ceases promptly upon withdrawal of the provoking stimulus. This circumstance could hardly mean that the thalamus 'serves as a reservoir of emotional tension' or contributes to the motivational aspects of emotional behavior (44).

One final source from which the inference has been drawn that the thalamus is the 'center of emotion' merits notice. The early theoretic formulations on the physiology of emotions—particularly those of Bechterew, William James, Lange, Cannon, and Crile—imputed to the viscera a prominent role in emotional expression and affective experience. This early orientation continues: 'Emotions . . . are defined usually as inherited pattern reactions involving extensive visceral behavior . . . and as differentiated in quality according to the dominance of the sympathetic or parasympathetic segments of the autonomic nervous system' (72).

At the outset of the current century the prevailing notion was that the complex of nerves and ganglia concerned in the innervation of the viscera functions essentially independently of the brain. At that time the only portion of the brain confidently known to be connected with this 'autonomic' complex was the medulla oblongata. When, therefore, the circumstance was demonstrated that the paleothalamus mediates and correlates a number of visceral functions (cardio-vascular, respiratory, gastro-intestinal, genito-urinary, thermo-regulatory and endocrinal) it seemed to many investigators entirely 'logical' to assume that the thalamus is indeed the 'center of emotions,' especially since the role played by

the cerebral cortex in visceral functions was as yet virtually unknown.

Subsequently disclosed facts reveal the gratuitous character of this assumption. A considerable amount of data is now at hand to indicate that the cerebral cortex, especially that of the frontal lobes, mediates 'visceral' functions no less than 'somatic' (4, 16, 17, 26, 41, 67). Figure 4 is a schematic composite of regions of the primate brain which, when subjected to stimulation or extirpation, consistently lead to modifications of visceral functions.

From such data, we may confidently assert that whatever may be the ultimate fate of those theories of 'emotion' which invoke visceral participation, the thalamus certainly enjoys no corner on the market of visceral representation and pattern organization. *If* the viscera should ultimately be proven to contribute in important ways to 'emotion,' investigators will be obliged to reckon with the neocortex as a potential mediator of 'emotional patterns.' Rioch (78) has put the matter thus: '. . . cortical representation of autonomic function will find explanation in terms of a corticalization of the efferent mechanisms of emotional expression.'

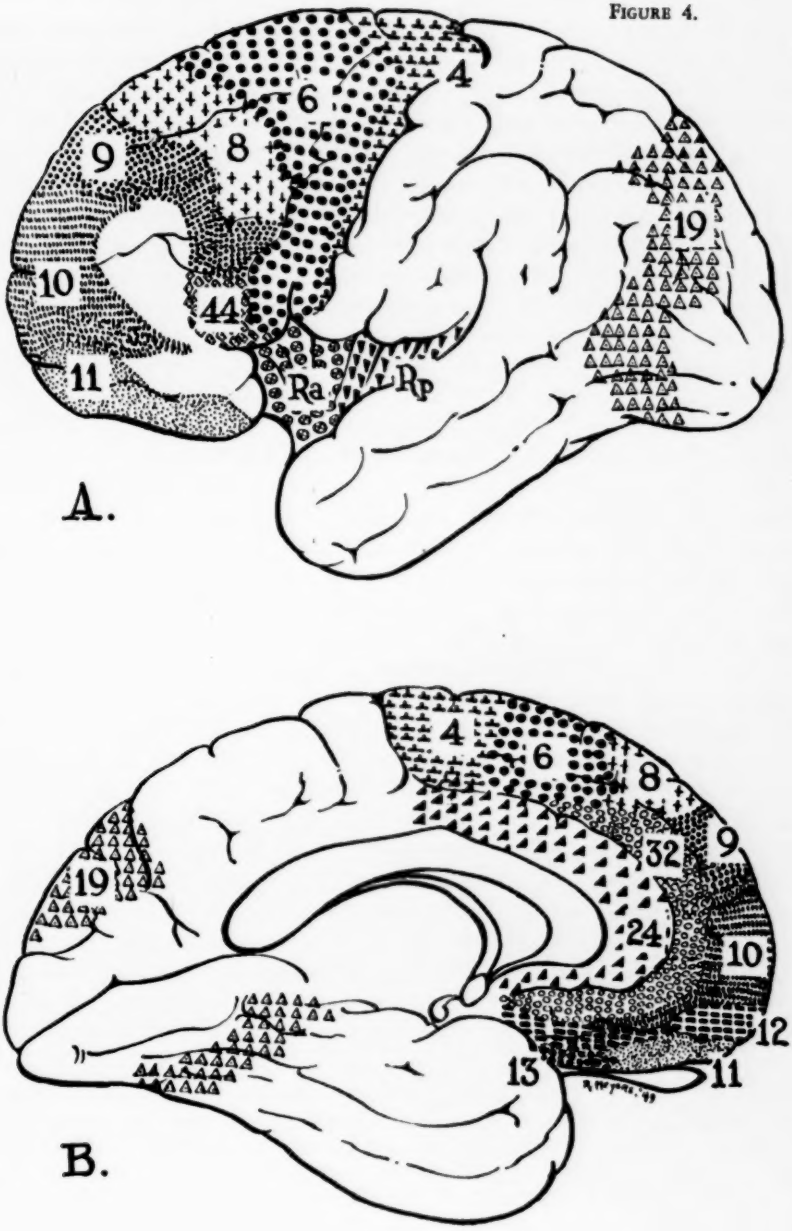
VI

THE CEREBRAL CORTEX AND THE 'INTELLECT.' Considering that most neurologists, psychologists, and psychiatrists grow up in families, attend school, and play in groups which differ in no important respects from those common to our culture, it should occasion no surprise that they carry over into their professional jargon axioms, postulates, and beliefs deeply rooted in Indo-European language habits. Under such circumstances, the exercise of the traditional dichotomy between 'emotion' and 'intellect' seems both 'natural' and self-evident. 'Reaction,' says Wolf (90), 'may be emotional *or* intellectual.' [Italics mine.]

When the point is pressed, most psychologists acknowledge that the meanings of the terms 'intellectual' and 'emotional' as applied to organismic activity are nebulous. Nevertheless, discussions continue to be conducted not only as if *qualitative* differences between 'intellect' and 'emotion' generally exist but also as if each listener is so clearly aware of the uses to which the speaker puts the terms that no definition is needed. Differentiation, however, appears to be far more easily accomplished in the form of verbal symbols than by unbiased exam-

FIGURE 4. CORTICAL FIELDS IN WHICH VISCERAL FUNCTIONS ARE REPRESENTED. A = lateral, and B = mesial aspect of left cerebral hemisphere. The diagram is a composite of findings derived from various human and subhuman investigations and therefore represents no particular species. The cyto-architectural areas corresponding most closely to the demonstrated functional fields are numbered in accord with Brodmann's cortical map. Cardiovascular functions are represented in Areas 4, 6, 10, 11 and 12; respiratory, in 6, 10, 11, 12 and 44; gastro-intestinal, in 4, 6, 9, 10, 11, 12 and 13; kidney and urinary bladder, in 4 and 6 (mesial surface); thermo-regulatory, in 6; pilomotor, in 4 and 6; sweating, in 6, 9, 10 and the island of Reil; salivatory, in 44; pupillary, in 8 and 19; and lachrymal, in 8. Recently acquired evidence suggests that the anterior portion of the island of Reil (Ra) is a 'motor' projection field and the posterior portion (Rp) a 'sensory' projection field for the hollow viscera in general.

FIGURE 4.



ination of the behavioral processes to which they are said to refer.[4]

It has been proposed, for instance, that *adaptivity* can be made a sufficient basis of differentiation. This, however, does not promise to be a very useful criterion, for, on the one hand, behavior commonly designated as 'emotional' may on occasion prove highly adaptive (*e.g.*, 'fear' transfixing the subject to such a degree that he remains inconspicuous to his enemy); and, on the other hand, behavior commonly designated as 'intellectual' may prove disappointingly non-adaptive (*e.g.*, as when a long experiment ends in a blind alley). Again, it has been proposed that 'intellectual' behavior may be distinguished from 'emotional' in that the former is characterized by *discrimination, abstraction,* and *generalization* whereas the latter is not. Here again, however, the criterion appears to be largely gratuitous. To be sure, *degree* differences may be discoverable; but in view of the circumstance that a responding organism invariably reacts to a *part* rather than to the *whole* of *any* situation in which it is placed (59), it would be difficult to imagine an actual instance of 'emotional' behavior in which processes of discrimination, abstraction, and generalization are not identifiable.

Learning as an 'intellectual' process regularly involves discrimination, abstraction, and generalization; and while the capacity to learn is certainly much facilitated by the presence of an intact neocortex, it is equally certain that it is not peculiar to the latter. If one grants that conditioning of the pavlovian variety represents one way of learning (33), then it must be accepted that the cortex is not indispensable to the process. It has been shown by Mettler *et al.* (54) that the decorticate dog with thalamus intact can be conditioned. It has been further claimed by Shurrager and Culler (84) that the 'spinal' animal can be conditioned. Again, comparative psychologists are well aware that invertebrates, (*e.g.*, worms) completely lacking in both cortex and thalamus can be readily conditioned. The phenomenon of extinction of conditioned pattern has also been demonstrated in all these cases. Hence, to whatever extent capacities for learning, conditioning, extinction, etc., may be viewed as substrates of 'intelligent' behavior, they appear to constitute *general properties* of nervous tissue and as such are not unique features of cortical activity.

It becomes apparent upon critical analysis that in employing the term 'emotion' some writers appear to be influenced in the main by the situation (stimulus) in the presence of which the response appears;[5] others, by the

[4] This was recently exemplified at the meeting of the Association for Research in Nervous and Mental Disease, December 2 and 3, 1949, consisting of a symposium on 'Life Stress and Disease.' Although the terms 'emotion,' 'emotional reactivity,' 'emotional state,' and 'feeling state' appeared in 24 of the 66 titles and were abundantly employed throughout the meeting, no speaker attempted to define them for his own or general purposes.

[5] In his experiments on the human infant, Watson (86) considered that qualitative distinctions exist between the emotions of 'fear' and 'rage.' He asserted that the 'fear' response was produced by (a) sudden loud noises and (b) removal of support; the 'rage'

observable bodily responses; others, by the subject's 'affective' experience alone; still others, by the socio-cultural and evaluative aspects of the phenomenon. The ambiguous uses to which the terms 'emotion' and 'affect' are put are apparent in the report of the American Council on Education (72). 'Affect,' says Luria (46), 'is not a completely specific state with constant characteristics and definite symptoms.' Comparable and often overlapping considerations are discernible in connection with the term 'intellectual processes.'

When in the slow course of phylogenetic advance the thalamus makes its appearance, it embraces *both* 'somatic' and 'visceral' patterns of function. In this fashion it *complements* (rather than replaces) the organization of 'somatic' and 'visceral' patterns residing within the sympathetic ganglia of invertebrates and the spinal cord, medulla, and midbrain of vertebrates. Similarly when, somewhat later in the course of phylogenetic advance, the neocortex appears, it does not merely 'cover' (as the term 'neopallium' unfortunately denotes) the pre-existing structures, but, like the thalamus which preceded it, *complements* their functions and provides still more complex mechanisms for the organization of 'somatic' and 'visceral' activities.

Viewed in this manner, the conventional notions of the cortex as an integrator *par excellence* of 'somatic' and 'intellectual' processes and the thalamus as an integrator of 'visceral' and 'emotional' processes appear to have been sustained far more by human ignorance than by the physiologic phenomena under inquiry. It should have been apparent long ago that 'intellectual' and 'emotional' processes are not polarizable propositions of the 'either-or' variety; rather, that as ways of behaving, they are distributable on a *continuum* and that in the interest of total organismic economy *both* may be served by the thalamus *and* the cortex as well as by neural tissues in general.

The consequence of endorsing the conventional dichotomy between 'intellect' and 'emotion' is that certain of the disease processes to which the human is heir are likewise viewed as dichotomizable. Some disorders (paranoia, certain types of schizophrenia, etc.) are looked upon as 'essentially intellectual' and others (manic-depressive psychosis, involutional melancholia, agitated depression, etc.) as 'essentially emotional.' But to support consistently any such dichotomy in actual clinical practice requires the exercise of a considerable amount of selective ignorance and serves no useful purpose save, perhaps, that of didactic teaching.

Within the past two and a half years, the writer and his colleagues, Drs. John Knott, Robert Hayne, and Donald Sweeney, have obtained a number of electrographic records bearing upon thalamic, striatal, and cortical interrelation-

response, by (a) noxious stimuli and (b) pinioning the limbs, preventing freedom of movement. His critics contended that characteristic differences could not be recognized in the infant's *behavior*, and that they had probably been inferred from what Watson himself knew of the provoking situations in each case.

ships in patients suffering from disorders loosely spoken of, on the one hand, as 'intellectual' and, on the other, as 'emotional.' The findings have been compared with similar recordings obtained from 'control' patients in whom no clinical evidence of an 'intellectual' or 'emotional' disorder was apparent. The series now numbers 32 subjects. Some results of these investigations have already been published (31, 42, 61, 62). The data bearing upon the 'intellectual' and emotional' issues are as yet insufficient to warrant comment beyond the general statement that thus far no consistent electrographic differentiations have been demonstrable between the two. They therefore raise some doubt as to whether or not the conventional distinction between 'intellectual' and 'emotional' disorders is supportable.

FROM THE PRESENT WRITER'S standpoint, the only objective distinction between 'intellectual' and 'emotional' activities is that expressing the *relative discreteness or diffuseness of segmental bodily activity* evoked in a given situation. Where the 'somatic' and 'visceral' activity [6] of the individual is confined to a relatively few neuromuscular segments, we may speak of the behavior as *relatively* 'intellectual' (regardless of whether or not it proves to be adaptive); where wide participation of neuromuscular segments is evoked in the situation, we may speak of it as *relatively* 'emotional.' By this semantic device, we avoid pigeon-holing and signify that the distinction between them is *quantitative* only.

The observable behavior of the organism does not lend itself to a dissection of 'intellectual' from 'emotional' components. When engaged in a game of chess, the individual can be considered as exhibiting 'purely intellectual' behavior only if his drives to gain ascendency over his rival, his mild but nonetheless existent apprehensions over the possibility of being checked, his implicit satisfactions in working out of a 'tight spot,' etc. are ignored. Even in the performance of a 'pure intellectual' activity such as contemplating the number 337 as opposed to 338 it may be seriously doubted whether the experience can be altogether devoid of 'pleasurable' or 'unpleasant' features. Esthetic or other affective preferences for 7 or 8 can usually be shown to obtain. In a similar sense, analysis of activities commonly called 'purely emotional' reveals that discrimination, abstraction, and generalization are regularly involved, so that those activities prove to be neither separate nor separable from 'intellectual' processes.

VII

IN BRIEF REVIEW, then, at least three fallacies of an elementalistic character inhere within the proposition that the thalamus is 'the center of emotion' and the cerebral cortex 'the seat of the intellect': (i) that of imputing to one agent what may in fact be ascribable to many; (ii) that of assuming that be-

[6] As employed here, the term 'activity' refers to implicit as well as explicit and to 'visceral' as well as 'somatic' behavior.

cause one agent plays thus-and-such a role, another cannot or does not; and (iii) that of supposing that the behavior of an organism is phenomenologically divisible into two distinct classes—'intellectual' and 'emotional.'

In addition to noting these 'logical' objections we have reviewed a number of findings drawn from experimental and clinico-pathologic sources which militate against the dichotomy under inquiry. Unbiased examination of the evidence suggests that, in concert with other portions of the nervous system, *both* the thalamus *and* the cortex participate in biologic processes which are variously labelled 'emotional' and 'intellectual.'

In view of these considerations, the writer urges that the elementalistic practice of equating the terms 'thalamic' with 'emotional' and 'cortical' with 'intellectual' be abandoned at the earliest possible moment. These constructs are in no way essential to the broad formulations of general semantics. Their retention can serve no purpose other than to detract from the valid principles upon which the semantic discipline stands.

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I begin by laying down two aphorisms, which will, I believe, be approved by all mountaineers:

1. There is no mountain in the Alps which may not be climbed by a party of practised mountaineers with good guides, in fine weather and under favorable conditions of the snow, with perfect safety.

2. There is no mountain in the Alps which may not become excessively dangerous if the climbers are inexperienced, the guides incompetent, the weather bad, and the snow unfavorable.

To this I will add the corollary that the common question, Which is the most difficult mountain in the Alps? is meaningless, and proves how erroneous are the ordinary opinions on the subject. There are circumstances under which the Righi is far more dangerous than the Matterhorn under others. Any mountain may pass from the top to the bottom of the scale of danger, according to the variation of the circumstances I have mentioned, in a day, or sometimes in an hour. The fact is enough to show that the ordinary classification of danger is quite inapplicable, and would condemn some safe expeditions whilst justifying others in the highest degree dangerous.

LESLIE STEPHEN, *The Playground of Europe* (1875).

✯ OBITER DICTA ✯

THE GONKS AND THE TIGER

RAYMOND ROGERS

Mechanical Reactions

ABOUT a million years or so ago there lived an ancestor of the modern Gonks named Zero Gonk. He was a muscular, stoop-shouldered, hairy-faced banana-eater called Zero because, in any emergency, his reaction time was zero point zero zero. In his time, living was largely a matter of meeting emergencies of the most elemental sort. There was always the danger of being torn limb from limb. Zero was admirably equipped to live that kind of life.

A fundamental part of his equipment was a large, mental picture in color. Whereas the modern Gonks have a great many pictures cluttering up their minds, their ancestor had only one: The Tiger. It was unusually clear and vivid.

Fundamental to Zero's method of dealing with tigers was a constant attempt to detect their approach as long as possible before they arrived. To this end, he tried to make as many abstractions as he could — sights, sounds, odors — while The Tiger was still far away. The way Zero interpreted his abstractions is of particular interest. In response to a large number of the abstractions he made — scents and sights and sounds — he behaved as though there could be one meaning and only one: The Tiger. This interpretation he always made so quickly that it merits a special name: 'flash-association.' A scent on the breeze was flash-associated with this vivid mental picture of The Tiger so instantaneously that Zero had the feeling of having seen it, touched it, been clawed by it.

Instantly, after the flash-association had occurred, everything became a blur to Zero and he was dimly conscious of wind whistling past his ears. The next thing he clearly knew, he was in the top of a tree, while the tiger (it *was* a tiger) bellowed and clawed the tree trunk below. Zero didn't have to stop and decide that he would climb to the top of the nearest tree, and he didn't have to figure out how he would get there. He had an automatic control system, entirely separate from his thinking apparatus which, set in motion by the flash-association, took him to the nearest tree-top in the *least* possible time. There was no deliberation about it. The whole thing was like pushing buttons

and throwing switches to turn on lights and start electric motors. The symbol had but one possible meaning.

It is obvious, of course, that one reason for the automatic hook-ups and for the dominance of the automatic system over the thinking system was the stark necessity for speed. But the main reason was that, for Zero, mechanical reaction was the safest kind of reaction. Suppose he interpreted a sound as meaning The Tiger when it actually meant something else, and made a needless trip to the closest treetop. He lost nothing by such an erroneous interpretation, whereas he would have lost everything by an error in the other direction. Though it is impossible to avoid errors, Zero's nervous makeup was so designed that he would always err in a manner safest to him. And there really was, for him, no consideration other than safety. He didn't have to worry about what his neighbors might think. If he interpreted a sign wrongly, and there proved to be no tiger approaching, they would not remain on the ground laughing at him. They, too, would be sitting in nearby treetops.

And so a fixed, standard interpretation for all of a large group of symbols, together with a fixed, standard response to them, worked very well indeed for Zero Gonk. His nervous system became specialized for mechanical reaction, and he passed this specialization along to the next Gonk.

From Reaction to Interpretation

FOR A VERY long time after the time of Zero Gonk, during the lives of a great many later generations of Gonks, The Tiger remained their most dangerous enemy, and avoiding tigers remained the oustanding problem of living. Day in and day out, day and night, from one moment to the next, all Gonks had to be prepared to ascend the nearest tree at any instant. The mental picture of The Tiger, the flash-association of a great many sensory abstractions with this picture, and the resulting mechanical reaction became thoroughly incorporated into Gonk behavior.

If it hadn't been for the tigers, the Gonks would have had no trouble at all. They never went hungry because plenty of bananas grew on the trees, and they needed no shelter because the climate was warm and dry. Most of their other needs were fulfilled either automatically or without much effort on their part. Thus, they became highly specialized tiger-avoiders with no other particular abilities because no others were needed. All children were trained and endlessly drilled in the technique of tiger-avoiding, and a vast culture gradually developed and accumulated around this all-important activity. The Gonk heroes and heroines were people who could detect the approach of tigers before their fellows did on the basis of more subtle sensory abstractions, and the ones who reacted most quickly when the sign of a tiger was perceived. The stories that were told and preserved in Gonk tradition were stories of hairbreadth escapes from the raking claw, and people with scars upon their

glutei were regarded with the greatest awe and admiration. All in all, the Gonks were happy creatures during this phase of their history. They often looked back upon this period with nostalgia and thought of it as the time of 'the good old days' when, as we have mentioned, life was simple.

After a few eons had passed, however, a change began to occur in the climate — it gradually grew colder. This change had far-reaching effects upon the Gonk's tiger-infested tropical paradise, and these effects in turn reacted very unfavorably upon the Gonks' long established behavior pattern. As it grew colder, the bananas and tigers both became less and less abundant. The Gonks readily noted the decrease in the number of bananas; it became harder and harder to find enough of them to make a square meal.

It was not so easy, however, to mark the disappearance of the tigers. For so many ages the Gonks had reacted to every possible sign of The Tiger — every rustling of the underbrush, every unusual scent on the breeze, every flash of color in the distance — as though it meant, beyond any doubt, the actual presence of a tiger, that they had an overpowering tendency to overestimate the actual number of tigers around them. For this reason, the decrease in the number of tigers was for a number of generations hardly noted at all. For many years after actual tigers had become a rarity, the Gonks still continued to scramble up trees at the slightest unusual sight, scent, or sound.

EVEN AS the advancing cold deprived the Gonks of their traditional food supply and of the natural enemy to which they had become so well accustomed, it brought them a new and very satisfactory source of food. The temperature became suitable for rabbits. Although rabbit meat proved at first to be somewhat distasteful to them, the Gonks found that they could learn to like it, and that rabbits could be chased down and clubbed to death easily enough: a people whose chief occupation was escaping from tigers had no trouble at all in running down the swiftest of rabbits.

But the need for subsisting on rabbits introduced a seriously complicating factor into the lives of the Gonks. Bananas grow on trees and can be plucked at leisure; rabbits do not. Rabbits hide in bushes and make every effort to keep from being seen. In moving about through the bushes rabbits make rustling noises, and in running from bush to bush they allow only very slight glimpses of themselves — usually they are registered by the eyesight only as tawny flashes.

It doesn't take much imagination to see what the Gonks were up against after the disappearance of the bananas and the arrival of the rabbits. Put yourself in the place of one of them: you hear a rustling in the bushes and glimpse a tawny streak. Conditioned by long ages of training, your automatic control system instantly goes into action, you are dimly conscious of the rustling of air past your ears, and you find yourself swaying in the top of a tree. You look downward, expecting to see a bellowing tiger clawing at the

tree trunk, but there is no tiger. Instead, you see a big jackrabbit disappearing over the brow of a hill an eighth of a mile away — too far away, even though you can run like the wind. Your dinner is gone.

And so, after the appearance of the rabbits, living became very complex for the Gonks. There were always rustlings going on in the bushes — there was one tawny flash after another from bush to bush. The question was, did the rustlings and the flashes symbolize tigers or rabbits? There were two possible meanings for these signs, instead of just one meaning as there had been in the good old days, and this made life much more than two times as complicated as it had been. The automatic reaction which had served the Gonks so well for such a long time was no longer the safest possible reaction — it was no longer fool-proof. It still gave them the maximum protection against tigers, to be sure, but this was no longer the only protection they needed. Death under the tiger's claw is not the only death there is. One can starve to death too. As soon as it became apparent that the rustlings could have *two* possible meanings, each of which called for a different reaction, interpretation became of primary importance.

In their long later development as users of signs and symbols the Gonks passed through a number of critical stages, but this particular stage was the most critical of all: the era when *interpreting* signs became more important than reacting quickly to them.

How to Interpret a Symbol

LOOKING BACK from the vantage point of accumulated human experience upon this early crisis of the Gonks', we feel a strong temptation to editorialize, to kibitz, to say how we would have met the problem if we had been in their places. It seems easy enough, so many eons later, to figure out how the thing *should* have been handled.

In the first place, it would seem that anyone faced with the problem of interpreting a doubtful rustling in the bushes would have to stop reacting automatically as though all rustlings meant 'tiger.' Certainly it seems to us that no progress in interpretation could be made until the flash-association and the mechanical reaction were brought under control.

Second — but what is the use of going on with this sort of second-guessing? The Gonks never did achieve this first step, and so of course they never went beyond it. They never did stop their flash-associating and their mechanical reacting, and they never did make the sort of approach to symbol interpretation that we might have made. However, this is not to say that they failed to develop a method of interpretation. They *did* develop a method — they had to do it in order to survive. Furthermore, their method is not to be considered unworthy just because it is illogical; it is in fact one of the major intellectual achievements of human history. It worked roughly as follows:

All the Gonks got hungry, of course, as soon as the bananas disappeared, but the biggest and strongest men of the group got hungriest the quickest. These big strong men were first and most profoundly affected by the appearance of the rabbits. It was extremely unnerving to them to see a rabbit disappearing over the hill after they had scrambled to the top of a tree to escape what they thought was a tiger. As they got hungrier and hungrier, and more and more unnerved, they began to think more and more often about rabbits and less and less often about The Tiger. The thing that finally happened was that their mental picture of The Tiger was displaced by a new mental picture of The Rabbit.

This was a major change, of course, and for a time it caused a great deal of confusion in the nervous systems of these big strong hungry Gonks. When a rustling in the bushes was flash-associated with their mental picture of The Rabbit, their automatic control systems *still* wanted to react as they always had and caused them to scramble up a tree. After a period of inner turmoil and nervous chaos, however, a very neat readjustment worked itself out. When a flash-association occurred, these big strong Gonks *still* felt a whistling of wind past their ears, the same as ever, but instead of taking them *away* from the rustling as before, their control mechanisms took them *toward* the rustling, and when the whole thing was over they found a dead rabbit in their hands, sometimes with a few bites already missing from his carcass.

As you can readily see, this was a very efficient solution to the food problem, as far as the big strong men were concerned. By the time this reversal of reaction occurred, there were no more tigers left, and so the big strong men were in no danger at all no matter how many bushes they charged. Rabbits were fully as plentiful as bananas had formerly been, and so it didn't take them long to satisfy their appetites. After they became satiated, however, they still continued to charge bushes and catch rabbits because the rustlings continued to come from the bushes and of course the subsequent flash association and mechanical reaction was set off by each rustling. This means that the food problem was solved for all the rest of the Gonks — the smaller and weaker males, the elderly, the females, and the young — whose automatic control mechanisms had not undergone the great reversal and who therefore continued to respond to each rustling by scrambling up a tree. Those who had undergone the reversal brought in enough rabbits not only for themselves but for everyone else as well.

It should be possible at this point for the reader to feel some appreciation of the ingenuity of the Gonks' solution. There they were with a sign which had two possible meanings. Some of them reacted as though one of the meanings was correct, and the rest reacted as though the other meaning was correct. Thus, all possible interpretations were covered by the group without fundamentally changing their basic method of reacting. And, along with being able

to stick by their traditional behavior and avoid learning anything new, they were able to surivive!

The Higher Reality

AFTER A TIME, it was noticed by the rabbit-chasing members of the group that a great deal of time had passed since anyone had seen a tiger. This, of course, was not noticed by the other Gonks because they continued to react to all rustlings as though they had been made by tigers. But it was noticed by rabbit-chasers, and they began to wonder about it. As they said to each other from time to time, it seemed quite remarkable that not a single one of them had met a tiger in any of the bushes he had charged.

Ultimately, they began to suspect in a very small way that the tigers were gone. As more and more time went by, the suspicion grew, and finally it came to be discussed quite openly among them — that is, among the rabbit-chasers. At first, by an unspoken agreement among themselvese, the rabbit-chasers kept their suspicions from the rest of the Gonks. Later, after the suspicion had grown to become almost a certainty, they explicitly agreed among themselves to keep the whole thing a secret in order to protect their group prestige. It was nice to have the rest of the population believing that they ran great risks and exhibited great courage every day in the course of doing their work. Thus, the disappearance of the tigers came to be a sort of trade secret among the rabbit-chasers. It was passed down from father to son and jealously guarded for generations.

Of course, a secret shared by so many people could hardly be kept forever. There was a good deal of fraternization between the rabbit-chasers and the tiger avoiders, and somebody at sometime or other apparently talked indiscreetly. At any rate, the tiger-avoiders finally caught on and came to share the suspicion that there were no tigers, and that their scrambling up trees was unnecessary. With them, too, the suspicion grew and finally achieved the status of a certainty.

Here again one is tempted to editorialize and kibitz and become logical, to give a reasonable account of the way the Gonks *should* have reacted to this important bit of information. One might suppose that the tiger-avoiders would have relaxed and gradually overcome their age-old mechanical reaction to rustlings in the bushes — that they would have eventually stopped scrambling up trees. It is easy to imagine that the tiger-avoiders and the rabbit-chasers might have come to talk openly about the disappearance of the tigers, and possibly to laugh together at the thought of the long period during which both groups had behaved so foolishly — one group keeping the secret for no very good reason, while the other continued to scramble up trees.

But these things did not happen.

When the tiger-avoiders began to suspect, and later to feel certain, that there were no more tigers, they did not relax and gradually stop scrambling up

trees. They didn't even feel happy about the new information — in fact, they actually didn't accept it as new knowledge at all. It conflicted with their previous knowledge, it didn't fit in comfortably with their mental picture of The Tiger, charging and bellowing in pursuit of them.

Mental pictures which have been serviceable for a long time come to be accepted as being correct and true. We come to depend upon them just as completely as we depend upon the solid ground under us, and anything abstracted from the outside world which casts doubt upon them is just as profoundly disturbing as an earthquake which shakes the ground we stand on.

Naturally, a return of the tigers would have stabilized the whole thing for the tiger-avoiders; it would have relieved them of the threat of having to change their mental pictures and their matching behavior patterns. But there was nothing they could do to bring the tigers back. What does one do when he finds that his mental picture does not conform to outside reality, and that the outside world cannot be changed? Is there anything that can be done to avoid the awful ordeal of changing the mental picture?

There was one way out, and the Gonks found it. They developed a simple yet powerful method of preserving their mental picture. It consisted of withdrawing from the outside world, of taking the threatened mental picture out of contact with destructive new abstractions, of turning attention determinedly upon the mental picture and refusing to allow anything to disturb it.

Who Says There Are No Tigers?

IT MUST BE acknowledged that the method of mental picture preservation that the Gonks worked out can be effective only if the facts that are being dodged are the sort of external facts that *can* be dodged. Some facts, of course, cannot. But the absence of tigers, after all, was a negative perception. Nobody had seen one for several hundred years, but that was clearly no proof that one might not someday be seen. There was no way to demonstrate, beyond any question of doubt, that they were gone, and this is the thing that made the method possible.

The first step was to make the mental picture of The Tiger even more abstract than it had been before. This was done by increasing the number of natural happenings that could symbolize The Tiger. Instead of just recognizing the rustlings in the bushes and tawny streaks between bushes as representing The Tiger, a great number of other things came to be accepted as Tiger symbols. The sound of thunder was The Tiger bellowing at the foot of some tree somewhere — a tree in which a Gonk had found safety. Lightning was the tawny streak of The Tiger's charge through the forest, and wind was caused by the terrifying speed of the charge. With these and many other symbols of The Tiger's existence there was soon much less reason for doubting His reality.

The technique of mental picture preservation is essentially an extension of the fundamental processes of abstraction, symbolization, and manipulation of symbols. You search around for some new symbols to represent the thing depicted in your mental picture, and if you can find enough of them, you have no trouble in overcoming the perceptions that threaten your picture. This technique seems simple, but it actually calls for a great deal of ingenuity, cleverness, and pure artistry.

A tremendous amount of work went into the creation of Tiger symbols among the Gonks. The whole load of belief could not be borne by the naturally occurring symbols like those mentioned above. They were somewhat too abstract for some people — not all Gonks had the intelligence and imagination to appreciate them. There had to be other, more obvious ones, which could be used to give the feeling of The Tiger's presence to everyone, and which could be understood by anyone, no matter how limited his intelligence.

Of course, the basic behavior pattern of scrambling up trees was, of itself, highly symbolic, and served to keep the illusion alive until other symbols could be developed. These others each went through a long period of evolutionary development, but each of them finally emerged as an individual behavior pattern of its own, carried out repetitively, over and over in the same way, a system of habits, a small play-acting routine heavily freighted with meaning for those who participated.

The rabbit-chasers were the center of one of these routines. A little play was acted out in which a rabbit-chaser charged upon a bush after a rabbit, only to run into The Tiger — that is, a medicine man wearing a mask to resemble The Tiger's head. Feeling ran so strong during this play-acting sequence, however, that all the Gonks *felt* that it was actually The Tiger and not just a facsimile. The rabbit-chaser would grapple with The Tiger and strangle Him with his bare hands. In this and other sequences the rabbit-chasers were recognized as men of superdaring, and they came to be looked upon as the elite of Gonk society. A number of minor sub-symbols were used to emphasize their status — special rabbit-skin clothing, a special headdress, a special mark branded upon their foreheads with red-hot embers, etc.

Some brilliant member of the group reasoned that if The Tiger were well fed, He would be less likely to catch and devour any of the Gonks, and this gave rise to another little play-acting routine. Some of the rabbits that were caught were 'fed' to The Tiger by burning them in a fire, and it became standard practice to feed every seventh rabbit to The Tiger in this way. After a sufficient number of repetitions of this symbolic act, almost any Gonk was able to identify the fire quite literally with The Tiger. When one of the Gonks died, it was said that The Tiger had finally caught him, and his body was burned formally before the whole group to symbolize what had happened.

The Great Split

AS TIME went on, the ceremonies of the Gonks became more and more refined and effective, so that there was no longer any possibility that the mental picture of The Tiger would be destroyed even if no one ever saw another tiger in the flesh. As ceremonial technique developed, it assumed more and more of the burden of protecting the cherished mental picture, and it became less and less necessary to pretend in everyday living that the existence of The Tiger was real. Thus, two apparently paradoxical developments took place side by side: on ceremonial occasions, the Gonks behaved in a more and more unrealistic and fantastic manner, whereas in everyday living they became more and more realistic and down-to-earth. And although the paradox is evident to any objective onlooker, it isn't and it never has been apparent to the Gonks.

As the ages marched along, they gradually stopped flash-associating rustlings in the bushes with their well-preserved mental picture of The Tiger. They stopped scrambling up trees. They took to walking quite unconcernedly through the forest, no matter how many rustlings they heard. Everybody began to catch rabbits, and the rabbit-catchers were no longer a truly distinct occupational group, although their distinction was maintained very strictly in the traditional ceremonies. Even the ceremonial distinction came in time to mean less, since everybody wanted to be inducted into the Rabbit-Catchers Brotherhood as soon as it came to be openly accepted in everyday life that there were no more tigers.

And so the Gonks finally came to live on two different levels — part of the time on one and part of the time on the other. In everyday living, they proceeded as though there were no tigers — which there weren't. On ceremonial occasions, they proceeded as though The Tiger were the most profound reality in their lives.

This split in their way of living — this remarkable schizoid feature of their existence — is the culmination of their intellectual development and the most noteworthy single feature of it. If we miss or ignore this feature, we fail to understand the significance of the Gonks' whole symbolic evolution. They finally reached the point where they could, in effect, say 'Tigers do not exist,' and at the same time 'The Tiger *does* exist.' Furthermore, they could say these things without being aware of any contradiction at all.

Of course, they did not make these statements in the form of simple verbal declarations. So stated, the contradiction would have been obvious. These things were each said indirectly, by means of extremely varied and complex symbols, in such a way that the contradiction between them was far more easily missed than marked. It was an achievement of no small subtlety and sophistication in the field of symbolization. It earned for the Gonks the reputation of being the founders of Civilization.

✯ DISCUSSION ✯

THE 'FACTUAL' FILM IN A VISUAL AGE

RUSH E. WELTER *

CRITICISM OF MOTION PICTURES ignores a basic function of the film medium, the communication of 'fact.' This failure in turn means that few persons have methodically examined a source of contemporary opinion about the world. Specifically, critics have not evaluated film as a source of political opinion.

It seems to me that the social significance of the so-called 'factual' films (newsreels, documentaries) is now greater than ever before, both because of the tendency to conceive of pictures as 'fact' and because a new form of pictorial communication, television, has adopted almost without change the techniques of motion pictures.[1]

The discussion of the problem here is focussed on the newsreels, but possible extensions of the analysis are indicated. It is historically appropriate, furthermore, to consider the newsreels independently, for significantly at three critical periods in the development of motion pictures it has been the newsreels which have led the public to adopt films as a primary source of entertainment as well as information.[2]

THE SOCIAL PATTERN behind the great appeal of news in pictorial form appears unmistakable. Sources of popular knowledge in the current era are

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[1] The importance I attribute to television may appear over-emphasized, but I believe that a decade hence television will have exceeded rather than fallen short of my anticipations. One of the chief present bars to its rapid spread—the quarrel over color television aside—is the absence of an industrial liaison between television broadcasters and the movie industry, and it is unlikely that the split will last long.

[2] In the late 1890's the appeal of the newly-invented motion picture was that of a realistic representation of newsworthy events, and it survived even after the introduction of the fiction film in 1902. In the late 1920's the Fox newsreel played a major part in bringing both public and movie-makers to adopt sound. Recently it has seemed that the news function is a large element of the popularity of television.

It is possible also to cite the popularity of so-called 'documentary type' fiction films, and the recurring search for ways to adopt motion pictures for school study of such subjects as history.

becoming primarily visual rather than verbal.[3] The development of rapid and inexpensive methods for reproduction of news drawings and subsequently of news photographs, since about 1850, has not only made news in pictures possible, but has actually encouraged Americans to absorb their information and to try to understand even their complex problems by pictorial means. They have increasingly adopted news drawings, news photographs, animated charts and diagrams, which substitute visual abstractions for verbal.

The contemporary popularity of *Life* magazine is not accidental, as the number of inferior imitations shows. These media have been by no means exclusive, but it appears obvious that the motion pictures have simply extended the pictorial trend. In fact, it can be argued that without popular demand for such a medium of information the motion pictures might not have been born when they were. In the years 1896-1897 literally dozens of inventors were striving in secret to create the devices which would capitalize on an unmistakable popular desire.[4]

The desire for news in pictures may, furthermore, reflect the complexity of modern life, which encourages mental laziness—*i.e.*, signal reactions. It may also reflect current democratic politics, which puts the theoretical burden of decision in complex political affairs on classes which until the nineteenth century took slight part in politics. When enfranchised, these classes felt a desire to master events in terms peculiar to themselves, those of simplicity and 'common' sense and *prima facie* (in this context, pictorial) evidence. Finally, in the last decades, many Americans seem to have over-developed their sense of history. They demand some explicit vehicle whereby they can be present at 'history in the making' without involving themselves in difficult analyses and abstract considerations. Amid a chaos of unmanageable events, they seek coherence and unity, which the pictorial medium can provide, if only because it submits to artistic controls in the recording of events.

IT IS IN THIS social context that a fruitful analysis of 'factual' motion pictures may be made. Such a view indicates primarily the analysis of the newsreel's philosophy of 'realism.' As an extension of a pattern unfolding in the last hundred years of journalism, the newsreel is a historical and social commentary. However, beyond that, considered as a factor in the development of modern public opinion, it reveals a flaw in the 'democratic' theory of the essential right-

[3] See, for instance, J. P. Mayer's *Sociology of Film* (1946), Chap. 1. There may very well be a psychological parallel between the recent appeal of pictorial as opposed to verbal communication, and the philosophical shift in the nineteenth century from a mechanical idea of the universe to one which visualizes it in terms of process. Pictures, for instance, cannot grasp cause-and-effect, but they can record instants in the passage of time.

[4] For the best summary of the movies up to 1909, see Georges Sadoul, *Histoire Générale du Cinéma, Vol. 1, L'Invention du Cinéma, 1832-1897* (1946) and *Vol. 2, Les Pionniers du Cinéma, 1897-1909* (1948).

ness of majority opinion. Although it is impossible to enter here into the controversy over the specific cause-and-effect relations between newsreels and public opinion, some influence is certainly a tenable assumption.

The basic question, then, to ask of the newsreels is what use they make of 'reality,' taking 'reality' as an assimilation of observable facts abstracted to the level at which knowledge may legitimately lead to action.

There are two assumptions on the basis of which the question may be asked. The first, and common one, is to assume that the newsreels are unrealistic only when they misrepresent events. Generally, such misrepresentations have tended to favor business against labor, conservative politicians against liberal or radical ones, militarists against pacifists, and so on. There are several ways of accomplishing such favoritism: the newsreels may censor 'clips' which would inevitably favor those with whom they do not agree; they may lift scenes out of context; they may explicitly editorialize; they may literally invent circumstances for the camera—and on occasion the newsreels have done all these things. But by and large, where a newsreel has manipulated news, it has presented only a slightly more conservative version of the average attitudes of its audience. It may have been pressed to do so by economic necessity, for the newsreels run at a deficit, and they cannot afford to intrude on the profitable distribution of fiction films by alienating patrons. The result, of course, has often been that they have abdicated controversial functions to the extreme of avoiding legitimate news entirely. But the concern here is with the remnant of *bona fide* news which reaches the screen.[5]

The more specific aspect of the problem of 'reality' rests on a different assumption. It is useless to criticize the obvious falsehood of occasional newsreels, as most critics have, unless one realizes the implications and limits of any realism of which the newsreels are capable. Can *any* pictorial medium be realistic?

DURING BOTH WORLD WARS the newsreels for a time far outdrew fiction films at the theaters. What people saw, censorship and selectivity aside, were combat photographs of infantry advancing, artillery shelling invisible targets, ships fighting off air attacks, airplanes bombing targets. These things were undoubtedly 'real,' in the sense of being pictures of actual events which only the film could bring to the people at home. But the question is, were they the significant events of the war? Audiences could have been shown almost any battle, any barrage, any air attack, any bombing raid. Yet the profounder implication concerning Americans' characteristic search for reality in pictorial terms lies in the fact that men risked their lives to get pictures of *each* action, even though

[5] See John Crosby's brilliant satire on the failure of the news function in 'Newsreeland,' *The Atlantic Monthly* (December, 1948), 126-27.

to a large extent they were pictorially undistinguishable. In the simplest terms, they could not even show who was winning!

At that, the war pictures probably marked the height of 'reality' in news pictures.[6] Certainly they embraced indisputable facts of at least emotional importance. Peace-time newsreels, on the other hand, seem to have even fewer opportunities for filming what is real. Is the brief pictorial excerpt of a presidential candidate's speech a proper description even of the individual, let alone his function as a political leader, his relationships with his party subordinates, his capabilities, or his probable line of action? Yet there is substantial evidence that people want to see their candidates in such settings, and one responsible motion picture official closely associated with the news films feels that the simplicity of President Truman before the newsreel cameras helped him win the election because he appeared on the screen to be a 'better man' than Governor Dewey. Here the problem extends beyond a criticism of the function of newsreels to the basic question of how elections (to take a relatively simple example) are decided in a modern democracy. The particular point, however, still holds: people have been influenced by news which was not 'fact'—and they seem to have been conditioned to such over-simplification of their problems by their pictorial sense. In their political action they rely for information, at least in part, on a medium which neither informs them adequately nor stimulates in them an awareness that there are abstract social problems.

SOME MAKERS of newsreels have themselves recognized the limitations of their 'realism.' The *March of Time*, originated by a one-time newsreel man, was intended to validate the handling of news events in pictures by providing a pictorial essay which included both 'background' and possible outcomes of given events or decisions. Putting aside the inevitable but, as we have seen, secondary question of selectivity in composition, the *March of Time* could succeed only so far as its pictures, accompanied by the dramatic recitations of its 'voice of doom,' could record and project events. Pictorially, it was as limited as any newsreel; it could only 're-enact' events which the newsreels themselves might have covered. Occasionally it has gone beyond, to conscious reconstruction of events which could never have been filmed, but when it has, it has been publicly criticized for 'unrealism.'[7] It has had to tell things in pictorial terms: the American farmer becomes a man sitting with a large family at a bountiful table, driving over an obviously productive farm, talking in neighborly fashion with his friends at the bank or the agricultural fair.

So far as the commentator of the *March of Time* is concerned, he has ad-

[6] Compare the fascination which Matthew Brady's still photographs of the Civil War hold for historically-conscious Americans today.

[7] The early comments on the *March of Time* were particularly conscious of its 'unreality' as compared with newsreels.

mittedly been an improvement over the casual or irrelevant voice of most newsreel clips, but still a voice only supplementing the medium. (The voice only intensifies what the pictures make 'plain.') His intrusion has often been resented. More important, however, is the fact that a film voice cannot hope to present a legitimate summary of any basic problem, within the confines of the medium; it is always dependent for subject-matter on the pictures it accompanies.

BASICALLY, then, the newsreel and the 'factual' film are generally quite inadequate representations of life. They cannot get beyond the images of Plato's cave. The Nazi newsreel-makers realized this to the extent that they subordinated verbal accompaniment to musical themes and stagey pictorializations.[8] In effect, they moved over to the fiction film. They deliberately abandoned rationality, but their results were the more effective for being in complete harmony with the potentialities of their medium.[9]

It would be easy to dismiss this whole contention by saying that the newsreels are admittedly not suitable vehicles of fact; that they cannot contribute to popular understanding of the world. But I think that such dismissal would ignore the social patterns apparently emerging in a 'visual' age. People seem to be regressing conceptually toward pictorial 'fact,' in a critical period when facing *all* aspects of reality, including those of higher order political and ethical abstractions, is most urgent. And television can only intensify this tendency.

[8] See Siegfried Kracauer, 'The Conquest of Europe on the Screen: The Nazi Newsreel, 1939-1940,' *Social Research* (September, 1943), 337-57; and an earlier more general study by Erwin Panofsky, 'Style and Medium in the Motion Pictures,' *transition* (No. 26, 1937), 121-33.

[9] The uses of the fiction film in providing conceptualizations of the political universe involve basically different considerations, which I do not propose to discuss here.

♦

A tradition in our organization and management literature tends to divide management into separate compartments. For example, we can find books which flatly state that management consists of divisible parts, such as planning, organizing, staffing, directing, coordinating, reporting, budgeting. We talk about management that way, and split it verbally for consideration. But we should understand that we don't actually split it in fact. Have we ever met 'budgeting' that was not 'planning'? Have we ever 'staff trained' that we were not 'directing'? Have we ever met a person 'organizing' without 'training' and without 'coordinating,' etc.? We must not forget that we split staff training into verbal entities for convenience, and we split our staff training as a part of management, for verbal consideration. We just don't see them separately in living operating management.

WILFRED V. JONES, in *Employment Security Review*

✡ BOOK REVIEWS ✡

A Psychology for Semanticists

THE PSYCHOLOGY OF BEHAVIOR DISORDERS, by Norman A. Cameron. New York: Houghton, Mifflin Company, 1947. 622 pp. $5.

FOR THE PERSON interested in general semantics who is also deeply interested in psychology, here is an authoritative interpretation of behavior in terms of a non-elementalistic man: an organism-as-a-whole-in-an-environment.

Dr. Cameron, professor of both psychology and psychiatry at the University of Wisconsin, has had full professional training both in objective psychology and in clinical psychiatry. In this book, he bridges the gap between psychology and psychiatry, by presenting *the 'abnormal' in terms of the 'normal.'* He drops no bombs, but he does plant a mighty seed that may have even greater effect on the future landscape of psychology. Quietly and without fanfare, he creates a new picture of behavior, by using *a different language*. But this is not a book of theoretical argument, concerned with tearing down other psychologies in order to advance the author's point of view. As the subtitle ('A Biosocial Interpretation') suggests, it is presented simply as a point of view—not as *the* new psychology.

His *biosocial* approach, the author says in his preface,

> . . . differs from classical *behaviorism* in rejecting reflexes, instincts and emotions as building blocks out of which human behavior was supposed to be constructed. It is holistic and analytical rather than atomistic and synthetic. In dealing with biosocial behavior, normal and abnormal, the emphasis is less upon the physiological machinery of the individual than upon *communication, learning, role-taking and socially-derived self-reactions*. The biosocial interpretation departs from traditional *psychobiology* by dispensing entirely with the concept of consciousness and the distinction between mental and non-mental. [Italics supplied.]

While Dr. Cameron has used a different language, he has not coined a new psychological terminology. His psychological language is in some respects like Basic English: its chief character is derived from *the words it is forced to leave out*. His substitute terms give no trouble, because they belong to the common vocabulary. He simply does not choose to explain behavior in terms of 'instincts,' 'emotions,' 'drives,' 'mechanisms,' 'ego,' 'id,' and so on. The substantives in his

sentences tend to be people, bodily organs, processes, relationships, symptoms, actions, social institutions.

But the author is not adverse to using more 'abstract' terms when these do not have too strong connotations that might link them to familiar elementalistic theories of behavior. For example, 'repression.' As he uses it, this term connotes a *process,* or a dynamic relationship between 'stimulus,' evaluation, and response. While it is not extensional, it evokes no ghostly images. It is *frankly* abstract; whereas 'the Censor' is an anthropomorphic term that conjures up an Invisible Man inside us. 'The Censor' is the kind of term Cameron successfully avoids, while giving us a consistent picture of behavior.

Though 'repression' is scarcely an important topic in the book, Cameron's development of this idea (without referring to a 'censor') may serve as an example of his treatment. 'Repression' appears to be the by-product of the normal process of giving attention to other stimuli. That is, whenever we attend to any stimuli, we are able to do so only by excluding from our awareness the other 'stimuli' that are present. Or, in terms of general semantics, there is no evaluation until there is abstraction.

Why do we attend only to selected stimuli, if there is no censor? Because past experiences have made us more sensitive to certain patterns of stimulation than to others. 'Repression' then appears not as an active force, but simply as a passive residue of characteristics left out—much like the 1 that remains when we subtract 2 from 3.

Throughout the book, the author resists the common habit of reifying psychological terms. One reads not of 'schizophrenia' but of people with 'schizophrenic disorders.' This subtle change of emphasis from the *disease* to *disorders* may seem unimportant. Yet the former term has acquired status as an entity, while the latter is understood as a process—a mal-*functioning* of an organism.

This subtle change in emphasis, characteristic of the entire book, will hardly be noticed by the professional psychologist, psychiatrist, or advanced student who has schooled himself to be on guard against the misleading implications of terminology. Yet it is a definite boon to new readers in the field. They will surely get fewer notions that they must later unlearn or reinterpret in the light of further study in general semantics, medicine, sociology, chemistry, physics, and biology.

These terminological aspects of the book have been emphasized here because they are of special interest to readers who are used to the orientation of general semantics. However, the book is not for the lay reader of psychology. It is aimed primarily at the serious student, the clinician, the educator, and the sociologist. The main emphasis of the book is on the origin and development of behavior disorders, and the clinical picture of the various syndromes. The author is little concerned with hard and fast distinctions between the disorders; instead he emphasizes the great overlap of symptoms, and the purely arbitrary and utilitarian

value of any system of classification. In some respects he departs from the standard classifications.

There is little discussion of specific therapy. Yet the author emphasizes that the choice of technique should depend upon the nature of the unique biosocial relationship that is needed between patient and therapist *in a particular case.* Without espousing or condemning any form of therapy for use in all cases, Cameron appears to lean more heavily toward the Rogerian non-directive methods.

FROM THE standpoint of general semantics, it is Cameron's chapter on *'Language, Thought and Role-Taking'* that is most interesting and important. It appears early in the book, and forms the basis for the author's *biosocial* interpretation. Other than the use of a dynamic, non-elementalistic terminology, the viewpoint developed in this chapter is the principal innovation and contribution of the book to the study of behavior disorders.

The author's semantic orientation may be seen from a few typical quotations taken at random:

> It is the virtual absence of elaborate language behavior in other animal forms which principally accounts for the fact that nothing approaching complex behavior disorders can be demonstrated below the human level. . . .
>
> . . . The effects on the individual's life of acquiring and using language do not stop with interindividual signaling and symbolizing; they go right on to influence his thinking also . . .
>
> . . . The fact that verbal operations may differ from the non-verbal manipulations they are supposed to represent, and may give different results, is of the highest significance for the behavior disorders. Schizophrenics, in particular, fall into the verbal traps of their own making . . .
>
> . . . In conforming to the conventions of language behavior, [the child] conforms also to what those conventions imply in his culture. . . .
>
> . . . Sharing one's responses and attitudes overtly with other persons is the most effective way of bringing them into line with those of the prevailing cultural patterns. Reactions which for any reason are left uncommunicated and unshared with others are likely to play a leading part in behavior pathology because they lack this controlling influence . . .

While this point of view is not new to students of general semantics, it is illuminating and exciting to see it presented as the fundamental basis around which an original view of human behavior is developed.

EVEN MORE stimulating is the author's discussion of *role-taking*—a derivative of language behavior and social interactions. This viewpoint is so fresh and arresting that it is difficult to more than suggest its possibilities in a brief review. Under the influence of this term, 'personality' is seen not as a bundle

of mutually distinct 'selves,' but as a fluid organization of role-taking skills. In brief, *role-taking* refers to all those processes of social adaptation, in 'real' situations or in play, in which the individaul reacts to his own evaluation of himself, and the evaluations of others to him. It plays a part in fantasy, day-dream, escape, and delusion—and in healthy adaptation to life situations. Skill and ingenuity in *switching* one's roles are seen as fundamental factors in adaptation; and their lack results in rigidity and non-adaptativeness to changes in the environment.

The term and its exposition dispels much of the confusion formerly wrought by such terms as 'conscience,' 'super-ego,' 'idealized image.' But the importance of this section of the book cannot be suggested here. Psychologist or not, anyone interested in general semantics will be rewarded by reading this chapter in particular.

GEORGE A. TAYLOR

Chicago, Illinois

Easier on the Teacher

LANGUAGE IN THOUGHT AND ACTION, by S. I. Hayakawa. New York: Harcourt, Brace and Company, 1949.

THIS REVIEW of *Language in Thought and Action* is written from a restricted point of view. It is not concerned with those characteristics which made *Language in Action* a significant contribution to the literature of general semantics, nor with those that made it a Book-of-the-Month. It is restricted to the utility of the work as a major textbook in a college course in composition or communication, not as a supplementary work to be read outside of class, but as a book to be studied and utilized through some fifteen or more class meetings.

From the point of view of an instructor interested in teaching college freshmen to spell out the principles of general semantics as a guide to their own uses of language, both as communicators and as recipients of communications, *Language in Action* had conspicuous merits and equally conspicuous defects. It was, above all else, an exciting book. For students whose previous instruction in their native language had been confined largely to remedial exercises in prescriptive morphology, the first reading of *Language in Action* was an exhilarating experience. For the first time in their academic careers they were using a textbook which seemed to them both significant and interesting. That first reading not only gave them a new attitude toward language; it also gave them illusions that, having read it, they were wiser than other people, or would soon become wiser, if not overnight, certainly by the end of the semester. Often these illusions persisted even after the student's grades on assignments and examina-

tions challenged their reality. Surely no textbook ever did a better job of motivating students for a serious study of its subject.

But after the first preview reading was finished and the class began a detailed study of the implications and applications of successive chapters, the weaknesses of the book soon became apparent. Its greatest weakness was its lack of any adequate critical apparatus to test the student's mastery of the principles which he had studied and to implement the directives of the text. Informal class quizzes soon revealed that students had a less usable grasp of the implications of their reading than they believed they had and that there was a wide gap between their ability to tag exhibits with semantic labels and their ability to explain why these labels were applicable. What they needed was less indoctrination and more actual experience with problems requiring semantic analysis, and, in general, the textbook did not supply that experience. If it was supplied at all, it was supplied by the instructor, who was thus forced to do in class what he expected the textbook to do for him outside of class. For this reason instructors often complained that *Language in Action* was too easy to read and too hard to teach—that is, if the goal of instruction was to equip the student to do his own analysis. Unless the instructor cared enough about this goal to work hard to achieve it, the temptation to use up the class hour in further illustration of the chapter content was a strong one.

The second major weakness of *Language in Action* as a textbook was its overuse of classification. As students moved progressively through chapters dealing with judgments, loaded words, snarl words, directives, affective connotations, and two-valued orientation, they became more and more confused about what constituted the differences between these classifications. It seemed to them, as it sometimes seemed to the instructor, that the same kind of linguistic naïveté was being described by different terminology in different parts of the book; the confusion thus engendered was increased by an arrangement of chapters that presented related material at widely separated parts of the text.

This combination of merits and defects made *Language in Action,* in the instructor's judgment, an exasperating book—he could not do without it, and he could not do what he wanted with it. What he wanted was a book that would ease the burden of classroom demonstration and analysis, shift part of the application of semantic principles from the instructor to the student, and still preserve the clarity of Hayakawa's exposition and the spontaneity of his style.

TO A GRATIFYING extent that is what he gets in ***Language in Thought and Action***. The revised version is a hundred or more pages longer, and most of the increased scope has been devoted to exercises which require the student to apply what he has learned immediately after reading a chapter. When the exercises are difficult, as the best of them are, Hayakawa and his consultant, Professor Basil H. Pillard, have provided a demonstration of the kind of applica-

tion desired, an innovation which will conserve both class time and the nervous system of the instructor. The very useful but—to the student—confusing device of the abstraction ladder, which originally took the student fifteen minutes to read and the instructor two hours to explain, has been clarified by an excellent diagram, as has the distinction between extensional and intensional meaning. The organization has been rendered more logical by the division of the book into two parts and a re-arrangement of the original material within these parts. And although the revised version still contains more technical terms than are necessary at the freshman level, there has been a conscientious attempt to remove the worst of the overclassification of the original book. To anyone who has not used *Language in Action* as a major textbook these changes may seem not too significant, but in the classroom they represent the difference between exhortation and teaching.

Of the additions to the original text the most significant are two chapters on 'Art and Tension' and 'The Society Behind Our Symbols.' The first of these deals with what may be called the therapeutic function of art, its value as a means of easing tensions by bringing them 'symbolically under control.' Although this interpretation of at least a major function of art offers, finally, a convincing justification for the study of Humanities, and although it can be supported by authorities from Aristotle down, it is one that is generally not popular with teachers of literature. It is this reviewer's guess that all those who find Sandburg's 'Poetry is a synthesis of hyacinths and biscuits' a revealing statement of the nature of poetry will be inclined to dismiss this chapter as 'utilitarian' and 'mechanistic.' The technique of teaching literature by presymbolic utterance is too strongly entrenched to be easily displaced.

In 'The Society Behind Our Symbols' Hayakawa explores the relationship between social attitudes and linguistic naïveté. His explanation that the prejudice against 'Jews' is a specific application of a more comprehensive prejudice against 'marginal businessmen' seems to this reviewer a plausible oversimplification, and from the point of view of the classroom instructor it has the disadvantage of allowing a student to deceive himself by rationalizing his prejudice—to say 'I do not dislike Jews because they are Jews; I dislike them because they have the characteristics of Marginal Businessmen.' The original analysis, that Jew_1 is not Jew_2, that the device of classification is abused when it is reversed to point to characteristics of individuals, would seem to be better pedagogy.

APART FROM its use as a teaching instrument, *Langauge in Thought and Action* is a more mature book than its predecessor. Part of its maturity may be a reflection of the fact that, at least in academic circles, the study of semantics has changed from a cult to a movement since the first edition was published. Part of it may be due to the maturing experiences which Hayakawa records in the Preface. But a significant part may be traced to discreet editing.

The misconceptions that one frequently heard when *Language in Action* began to merit attack—that semanticists thought we could solve all the world's problems by pulling ourselves up by our symbols, and that semantics was a social and political philosophy masquerading as a linguistic discipline—were sometimes nourished, though not begotten, by evidence from the text. Such a heading as 'Why is the World a Mess? One Theory' seemed deliberately designed to provoke signal reactions from the opposition. It is too much to hope that the revised version will escape misinterpretation, but at least such criticism will be more difficult to support from the pages of *Language in Thought and Action.*

JAMES M. MCCRIMMON

University of Illinois

Poems and Meanings

SEX, SYMBOLISM, AND PSYCHOLOGY IN LITERATURE, by Roy P. Basler. New Brunswick: Rutgers University Press, 1948. 226 pp. $3.50.

IN THIS VOLUME of literary criticism, Dr. Roy P. Basler explores the meaning of several well known literary works by analyzing their symbols and subject matter in the light of Freudian psychology. He does not consider prosody, nor esthetic values, nor the literary ancestors or progeny of the works or their authors. Of his primary concern with meaning he says, 'Although I recognize that meaning does not make a poem, I believe that all art is communication. . . . Until we have been at some labor to *invest* a thing with meaning, its meaning cannot be discovered.'

He selects for analysis Coleridge's *Christabel,* Tennyson's *Maud, Ligeia* and six poems of Poe, and T. S. Eliot's *The Lovesong of J. Alfred Prufrock* — 'these several most misinterpreted and misunderstood masterpieces in the English language.'

Dr. Basler describes *Christabel* as a medieval romance of innocent love 'confused by the inscrutable power of sexual necessity.' The preternatural figures of medieval witchcraft and fairy tales are translated in terms of Freudian symbols and the design of the poem appears composite in these terms. Basler suggests that Coleridge may have left the poem unfinished because the inevitable development of his theme would seriously have offended the sexual mores of his contemporaries, upon whose high esteem Coleridge greatly depended.

What is known of Edgar Allan Poe's life and personality has been studied psychoanalytically before, to varying conclusions. Basler, taking the complete evidence of the personality of one of Poe's heroes (teller of the tale, *Ligeia*), not only seems to arrive at a satisfactorily integrated explanation of the story,

but feels that he has touched deeply at the mystery of Poe himself, man and artist.

In Poe's poetry, Basler finds a keen awareness of the relationship between the conscious and unconscious. One of Poe's more obscure poems, *The Valley of Unrest,* he traces through several revisions during which original references to moral guilt were replaced by imagery suggesting only the psychic state of repression and unrest. Though the specific cause of repression is left to the reader's inference, the symbols used are those with which poets in all ages have described rejected love. 'Visitors' to the valley are interpreted as being perceptions from the conscious mind momentarily aware of the fear and sorrow buried in the 'valley,' or unconscious.

BASLER BELIEVES that in the poetry of T. S. Eliot much obscurity could be dispelled if the structural pattern or thread on which the various figures are strung is understood to follow the logical sequence of non-rational psychology, which nevertheless requires the reader's rational understanding, rather than the logic of conventional discourse. He maintains that Eliot's poems are too dramatic in presentation to be simply the lyrical expression of the poet's own psyche.

> What has generally been taken to be Eliot's reversion to medieval mysticism often appears to be a truly modern exploration of the psyche, and what has seemed to be a categorical declaration of belief seems more coherently a relativistic presentation of psycho-emotional experience.

However, Basler's particular treatment of *The Lovesong of J. Alfred Prufrock* was less satisfactory to this reviewer than the other essays. Applying the Freudian ego-id dichotomy to the 'you' and 'I' of the poem leads him at times to a rather arbitrary dissection of the movement of the poem. Of lines 37 to 38 Basler states:

> . . . the 'I' alternately adopts the point of view of the women and of the 'you' . . . for a few lines and then asks mockingly:
>
> Do I dare
> Disturb the universe?

Such classification of lines and intent (is the question entirely mocking?) in this case seems forced to meet the requirements of Freudian theory. To me it limits rather than enhances a perception of the smug, amoral personality Eliot has portrayed.

IN HIS INTERPRETATION of Tennyson's *Maud,* however, no such limitations are apparent. Basler describes the theme of this poem as a dramatic conflict between the hero's conception of the sordid predatory world of scientific fact on one hand, and his belief in absolute goodness and truth symbolized by Maud on the other. The hero's obsessive 'solution' for the conflict is his desire 'to hide

myself in myself,' as in a cave, or in death. He becomes insane. At the end, as he regains a measure of psychic balance, that self-destructive obsession is exchanged for one of self-sacrifice in a noble cause. He goes off to war because

> It is better to fight for the good, than to rail at the ill. I have felt with my native land, I am one with my kind, I embrace the purpose of God, and the doom assigned.

Addressing critics who have condemned or belittled Tennyson for these shallow concluding platitudes, Basler points out that it is the madman hero talking, not the poet. Tennyson was psychologically astute enough to realize that faith in some absolute ethic was all that could bring such a crippled creature out of his deathlike caves to relative sanity. 'The poem does not assert the existence of an absolute at all, but merely treats it as a psychological phenomenon necessary to the ego of the hero.' Basler himself apparently has a similar point of view. For he devotes several pages (which could easily send a general semanticist off to an avid review of Tennyson) to an explanation of the thesis of *Maud*. The Victorian poet was saying, Basler claims, that modern man (the hero) can never rise above psychological chaos until he learns to accept the limited view of the world that his finite senses reveal to him, and to face consequent uncertainty and relative values with equanimity.

THERE ARE SEVERAL ways in which Basler's approach to literary criticism varies from the practice of some current leading critics. For one thing he refrains from using in argument material not presented in the book itself. His introductory essay includes a summary of most of the Freudian theory that he applies to the literature. Each work analyzed is printed in full following its interpretation. And when Basler states that the quotation from Dante heading *The Lovesong of J. Alfred Prufrock* is the key to that poem, he not only gives a translation of the passage, but explains its significance in context of the *Inferno*. That is, the book is arranged to be understood by anyone who enjoys poetry.

Basler also departs from standard critical procedure by declining to pass esthetic judgment on the poems considered. Of course, neither psychological nor any other analysis of content alone, as this book is, can provide criteria for the esthetic value of a work of art. But to many critics the search for such criteria is of deeper concern than any search for meaning. For the right to hand down judgment seems to be considered the high badge and privilege of the critical profession.

Huntington Cairns, in his introduction to the Johns Hopkins *Lectures in Criticism* in 1948, said:

> The first task that confronts literary criticism, if it wishes to correct its present chaotic condition, is to determine whether it can give valid judgments or not. It can only do that by formulating propositions in terms

> of which literature should be judged and endeavoring to ascertain whether those propositions are consistent, whether they have been properly deduced from other propositions, whether they support the judgments which it is asserted follow from them, and by otherwise testing them. If a program of this sort is not followed, it is difficult to perceive how criticism in one of its traditionally most important aspects has any proper subject matter at all.[1]

In face of such a 'chaotic condition,' others—and these would include Basler—have been less concerned than Cairns with the need for a systematic organization of esthetic judgment. For example, Suzanne Langer has said, 'There is no immutable law of artistic adequacy, because significance is always *for* a mind as well as *of* a form.'[2] And Karl Shapiro, the poet, believes 'that good and bad in poetry cannot be taught but only experienced.' As he says, 'It is only when critics and audience finally agree, a process that may take centuries, that it can be said a judgment has been reached.'[3]

Basler, likewise renouncing the role of critic as judge, prefers simply to explain: to give out the tools with which a reader may 'labor to invest a thing with meaning.' Having revealed the psychological pattern of the poem, he leaves the discovery of its fuller significance and the judgment of its worth as art to the perception of the individual reader. His position is:

> That psychology, in the broadest sense of the term, provides the only frame of reference in which the ancient art of criticism can find its modern expression without remaining antiquated or becoming esoteric. . . .

JULIA SIEBEL

Northfield, Illinois

Emotional Growth of Children

PSYCHOSOCIAL DEVELOPMENT OF CHILDREN, by Irene M. Josselyn, M.D., New York: Family Service Association of America, 1948. 134 pp. $1.75.

THERE IS NO SCARCITY of books which from one viewpoint or another describe the emotional growth of a human being according to Freud's ideas of psychosexual development.

Psychosocial Development of Children is distinctive because the author consistently brings to the reader a consciousness of the child's external life situation at every stage of his psychological growth. Dr. Josselyn does not let you forget that while Tommy is working through his Oedipal conflicts he is also probably attending nursery school, is making friends, fighting, riding tri-

[1] Bollingen Series XVI, Pantheon Books, 1949, pp. 4-5.

[2] Suzanne K. Langer, *Philosophy in a New Key*. Penguin Books, p. 214.

[3] Karl Shapiro, 'A Farewell to Criticism.' *Poetry*, January, 1948, pp. 212 and 213.

cycles, painting pictures, playing cowboys. He is accepting other adults and children on some terms and is finding out about the give and take of affection and hostility outside his home at the same time he is finding his place in the family pattern. We see that he has quite a challenge to meet, this four-year-old, in handling internal tensions and responding to external demands. Dr. Josselyn suggests how the way he does one affects the other and how he can be helped to accomplish both more happily.

And later, in that bizarre time of life often too mildly referred to as 'the difficult period of adolescence' a parent cannot ever be right. If you tell your daughter what to wear to a party you're wrong; if you don't tell her you're still wrong. But it's understandably true because daughter doesn't know herself what she wants—she's trying to grow up and trying to remain a child at the same time. Knowing this a parent can make a brave effort to meet both needs.

Written for social workers to facilitate their helping an individual to solve his problems at a given point in his life through understanding the strains and stresses and possible emotional disorders in his life history, the book serves its stated purpose gratifyingly well.

However, since parents and teachers usually know a child before he has any need for a social worker and since the book is written simply and concisely, it is strongly suggested for them as well. Dr. Josselyn's language is refreshingly free of the professional jargon of either psychoanalysis or social work.

She writes about the ego and about security in a way that adds concreteness to terms almost drained of meaning by over-use. She points out, for instance, that the ego is the personality factor that enables a person to adjust his own drives to the demands of the outer world. Development of a strong ego may be encouraged by exposure to frustrations that are rational and real and are at the time within the child's ability to handle.

She speaks of security specifically as 'dependency security'—which emphasizes that secure feelings arise first from the satisfaction of dependent needs—and in so doing she removes a sort of stigma that has carried over from 'dependency' as seen in neurotic adults to dependency in any person any time. The author's style is straightforward and human.

KATHERINE COMER

Social Service Division, Bellevue Hospital, New York City

✯ CORRESPONDENCE ✯

'Plogglies and Politics': A Correction

SIRS: Pleased as I was to see my article appear in the last issue (*ETC.* 7.18-24, Autumn 1949), a crucial omission of mine has caused a most unfortunate result. In the paragraph concerning proportional representation, the prefix *anti-* was omitted from the word Nazi in the final typed copy. Proportional representation did *not* help Hitler as alleged in so many quarters, New York especially. It is safe to say also that its abolition in this city hasn't hindered the Communists as much as it has helped the Democrats, who employed 'PR' as a *bad* magic word to get a system of election for the city council which would give them complete control. I am particularly sorry that this one important typographical error occurred, because proportional representation has usually had such excellent results within the limited area in which any mechanical system can operate for good or evil.

FENTON JAMESON

New York, N. Y.

'Language and the Law': A Protest

SIRS: Mr. Loevinger is already so angry with my book, *Language and the Law: The Semantics of Forensic English* [reviewed by Lee Loevinger, *ETC.* 7.46, Autumn 1949] that I am fearful of provoking him further by asking him to read it—a task for which, to judge from the summary which he offers, he has not yet found the necessary leisure and calm. But I do protest gently against his account of my comments on the Greenville lynching trial. By quoting two remarks out of context, and inverting their order, he suggests that I hold up for the admiration and imitation of my readers the methods of the Greenville defense lawyers. This suggestion is false, and can be believed by no one who has read the book.

FREDERICK A. PHILBRICK

St. Paul's School, Concord, N. H.

'Evaluatics' Again

SIRS: I wish to ally myself with J. Russell Bruff who (*ETC.* 6.207, Spring 1949) recommends the use of 'evaluatics' instead of the confusing term general semantics. I suggest that members of the Society and Institute be asked

to express their opinion and vote for or against the adoption of the new term. . . I think that you will not hesitate to change a label when another one, in the opinion of the majority, will seem to be more appropriate for the thing it stands for.

Last March I came across a book which, I am amazed to find, has not been mentioned in *ETC.* It is *Ego, Hunger, and Aggression: A Revision of Freud's Theory and Method,* published in 1947 by George Allen and Unwin Ltd., London. It is based on S. Friedlender's book *Creative Indifference* (in German), which I am now endeavoring to procure. The author, F. S. Perls, apparently a native of Germany, is an M.D. and was a psychiatrist, with the rank of Captain, in the South African fighting forces during the war. He is a semanticist and advocates the study of the 'meaning' of words. I was deeply impressed by his 'differential thinking' (opposites, zero-point, degree of differentiation) and concentration therapy. I find the study and application of his teachings very beneficial and complementary to general semantics. In his chapter on 'Internal Silence' (p. 212) there is the following footnote:

> After having finished this book I came across Korzybski's *Science and Sanity.* Although he represents a far deeper analysis than I have ever attempted, and although his structural differential provides an apparently very effective method for experiencing the unspeakable level, I consider the method set out in this chapter to be simpler and more practicable than his.
>
> Nobody can read his book without deriving the greatest benefit from it. Later on I hope to be able to deal extensively with his magnificent approach to the psycho-'logical' problem. At present I have only to state that my attitude differs considerably from his wholesale condemnation of identification (see the chapter on ego-functions) and that I consider the figure-background concept to be preferable to the abstraction theory.

It is my opinion that an 'intermarriage' between the teachings of Korzybski and associates and those of Perls, which represent the 'holistic' point of view, would be of great benefit to general semantics.

BEN EHRLICH

Sydney, N.S.W., Australia

Quantitative Investigation of Speech Behavior

SIRS: The Executive committee originally charged to make arrangements for the Sixth International Congress of Linguists that was held in Paris, July 19-24, 1948, decided to establish experimentally a special section to be devoted to a discussion of the statistical study of speech.

At the resulting section-discussion, the consensus of opinion of the Congress was briefly as follows: recognition must now be made of the great value of the application of statistical principles to the study of linguistic and literary phenomena, as has already been amply demonstrated by the substantial research that

has been accomplished thereby since the 1920's. It is now clear that no description of a language or of its historical grammar may be viewed as complete that lacks a thorough quantitative study of its elements. It is considered to be the urgent duty of the Congress to make linguists realize the importance of quantitative studies for the more complete understanding of linguistic processes, as well as for the understanding of related broader psychological and sociological problems.

Accordingly at its session of July 22, 1948, the Congress voted to establish a committee of nine members to be charged with the execution of its wishes. The following were elected: Professors M. COHEN (Sorbonne, Paris), W. DOROSZEWSKI (University of Warsaw), V. GEORGIEV (University of Sofia), B. MIGLIORINI (University of Florence), F. MOSSÉ (Sorbonne), A. S. C. ROSS (University of Birmingham), H. SPANG-HANSSEN (University of Copenhagen), G. K. ZIPF (Harvard University), B. TRNKA (Caroline University, Prague).

After extensive deliberations, the Committee now summarizes its objectives as follows:

(1) To set up concrete empiric principles for systematic quantitative research into linguistic systems;

(2) To establish quantitative characteristics of languages on a comparative basis (*e.g.*, comparative cultural-chronological strata, comparative meaning-frequency distributions, etc.);

(3) To disclose the underlying principles that govern the frequency-distributions of linguistic elements;

(4) To disclose by means of accepted scientific methodology the relationships between these observed frequency-distributions and the 'qualitative' aspects of individual and social human behavior.

All interested persons are invited to communicate at once with the undersigned secretary of the Committee, to whom all relevant material, information, and requests for support are also to be transmitted.

B. TRNKA, *Secretary*
Committee on Quantitative Linguistics
The English Seminar of Caroline University
Prague V, Smetanovo n. 2, Czechoslovakia

ERROR IN AUTUMN ISSUE, VOL. VII, NO. 1.

By error, the words 'the late author' were used to refer to Dr. Lawrence K. Frank, director of the Caroline Zachry Institute of Human Development and author of *Society as the Patient*. Dr. Frank is, we are happy to say, very much alive. THE EDITORS.

EVALUATIVE SYSTEMS AT WORK

The Bill of Rights—for Me, but Not for Thee

'A resolution calling for restored civil liberties for members of the Socialist Workers party, a Trotskyite organization, was decisively rejected yesterday by 800 delegates to a Bill of Rights Conference at the Henry Hudson Hotel. . . . It originally read: "We call upon the President to grant pardons and restore the civil liberties of the eighteen members of the Socialist Workers party convicted under the Smith Act for the advocacy of its political program" . . . .

'In speaking for denial of civil liberties to the Socialist Workers party, Mr. [Paul] Robeson asked the conference, "Would you give civil rights to the Ku Klux Klan?"

' "No," chorused the delegates.

' "These men are the allies of fascism who want to destroy the new democracies of the world," the singer shouted. "Let's not get confused. They are enemies of the working class." ' (*New York Times.*)

How to Detect Germans

Maynard Whitlow, of Los Angeles, states that the book, *Race: A Study in Modern Superstition,* by Jacques Barzun (New York: Harcourt, Brace, 1937), 'belongs on any list of those exploding the "race" myth; Barzun turns up more evidence to refute the fallacies and assumptions of the racialists than anyone else I've run into.' Mr. Whitlow quotes from Barzun the following account of some French 'scientific' theories during the First World War:

> It was left once more to French genius to discover under the pressure of emergency a new application of 'science' to race-discrimination. This discovery was made by one Dr. Edgar Berillon. Its novelty may shock at first, but when one finds it recorded in the Bulletin of the Society of Medicine of Paris (June 25, 1915), and expanded in the reports of the French Association for the Advancement of Science (February 4, 1917) incredulity yields to authority. Besides, Dr. Berillon occupied important medical positions and must have been officially authorized and subsidized to lecture as he did all over France on the subject of his researches. His discovery is that the German race suffers from polychesia (excessive defecation) and bromidrosis (body odor). These diseases are the result of intemperance and lead to degenerescence and unnatural crimes. In the present War they serve to detect infallibly the spies of German race mas-

querading in France as Alsatians. By means of these criteria the doctor was able to discover such a spy in his own service and to bring him to book. The doctor confirmed his views by urinalysis which led to the further discovery that German urine contains 20% non-uric nitrogen as against 15% for other races. Moreover, the large intestine of the German race is about nine feet longer than normal, a test that unfortunately requires an autopsy. But when any of these abnormalities and diseases occur in France, they are generally found to accompany a German cast of countenance.

How to Think Straight

The American Economic Foundation is widely recommending the following vocabulary changes in socio-economic discussion as a 'stimulant to intelligent economic thought.' According to the proposed glossary:

'The Welfare State becomes the *Police State.*

'The Capitalistic Rich becomes *The Benefactors Who Supply the Tools That Make the Workers' Prosperity Possible.*

'Property Rights become *Basic Human Rights.*

'Strikes become *Demands Upon Management to Charge the Customer Higher Prices.*

'Wages and *Salaries* become *Payments by the Customer for the Use of the Workers' Energy.*

'Profits become *Payment by the Customer for the Use of the Tools of Production.*

'The Right to Work becomes *Involuntary Servitude.'* (Reported by the columnist, 'R.E.G.H.,' in the Los Angeles *Daily News.*)

National Security Measures: Turkey

JEAN TAYLOR, of Chicago, sends in the following quotation from *The Course of Europe since Waterloo,* by Walter Phelps Hall and William Stearns Davis (New York: D. Appleton Century, 1941, pp. 490-1):

> From 1880 to 1908, Turkey was under stark tyranny. The few pashas who dared to hint of reform were imprisoned or chased into exile. The grand viziers became simply the first ministers of despotism. Liberty of the press became such a farce that virtually no one would read a Turkish newspaper, because everything of the least interest, even on very harmless subjects, was carefully excised by the censor. A distinguished American traveling through Turkey was invited to address a religious meeting of native Christians. He chanced to use the word 'freedom.' The interpreter dared not translate the phrase containing it—the act might have landed him in a dungeon. Indeed, certain episodes of Abdul-Hamid's government seemed lifted from farce comedy. An American mission college imported some elementary chemistry textbooks from England. The consignment was held up in the customs office, and the professor in charge

was informed that the volumes were 'highly seditious.' When he expressed surprise, he was told a dangerous cipher against the sultan had been discovered, and he was shown the familiar formula for water, H_2O. It was gravely explained to him that 'H' undoubtedly indicated 'Abdul-Hamid,' and '2' even more clearly connoted 'Second'; while 'O' was a palpable covering for 'nothing.' The cipher therefore obviously read, 'Abdul-Hamid II equals nothing'—a deliberate incitement to treason!

Another sage deduction of the Sultan affected the entire city of Constantinople. Long after the use of electric light was common elsewhere, the city of the padishahs was illuminated by gas. The reason for this was that Abdul-Hamid lived in perpetual fear of destruction by dynamite, and the difference between a 'dynamo' (needful for electricity) and 'dynamite' never became clear in the mind of the Commander of the Faithful. He prohibited them *both* to be on the safe side.'

National Security Measures: U.S.A.

LEONARD ENGEL, in an article entitled 'Can Science Survive the Atom?' in *The Nation,* January 28, 1950, gives a later instance of 'national security' interfering with scientific pooling of knowledge and time-binding:

> The AEC's inflexible security regulations have also delayed many of its own projects and prevented the fruition of many research ideas. In fact, they nearly prevented the commission's outstanding research accomplishment, the creation of mesons in the powerful atom-smashing machines of the AEC's University of California radiation laboratory. Mesons are subatomic particles ordinarily found only in cosmic rays. Early last year surprised University of California scientists learned that their machines had been for months duplicating one of the most dramatic events in the physical world, the creation of mesons. They learned this during a visit of the Brazilian physicist C. M. G. Lattes, a leading cosmic-ray researcher, who showed his hosts a new method of developing their photographic plates. Lattes had been very nearly refused permission for the visit. His clearance took almost half a year of negotiations, which were several times on the point of breaking down.

Literary Controversy in America, or Allen Tate Takes His Stand, Suh!

THE AWARD of the Bollingen Prize for Poetry for 1948 to Ezra Pound, who was saved from being tried for treason for broadcasting for Mussolini only because he was adjudged insane, started a controversy in the spring of 1949 which has not yet died down completely. In an editorial in *Partisan Review,* April 1949, William Barrett questioned the wisdom and propriety of the reward, in view of Pound's expressed fascist and anti-semitic views, and invited a number of writers, including the members of the committee of judges who had made the award, to comment. Among the replies received and published in the May issue was the following from Allen Tate, a poet and critic, who, as

Fellow in American Letters of the Library of Congress, had served as one of the judges:

> I do not propose to express any extensive views on Mr. Barrett's article, but rather to set down a brief statement of my own position on the only serious question that it raises. . . .
>
> Mr. Barrett, it seems to me, goes a long way round, through a good deal of cant and vulgarity (to say nothing of the effrontery with which he invents the 'difficulties' of the Fellows in coming to their decision), in order to arrive at the following insinuation: The decision of the Fellows in American Letters of the Library of Congress was dominated by anti-semitic prejudice.
>
> I consider any special attitude toward Jews, in so far as they may be identified as individuals or as a group, a historical calamity; and it is no less calamitous when the attitude is their own. I consider antisemitism to be both cowardly and dishonorable; I consider it cowardly and dishonorable to insinuate, as Mr. Barrett does, without candor, a charge of anti-semitism against the group of writers of whom I am a member.
>
> I hope that persons who wish to accuse me of cowardice and dishonor will do so henceforth personally, in my presence, so that I may dispose of the charge at some other level than that of public discussion. Courage and honor are not subjects of literary controversy, but occasions of action.

Ye Olde Oedipus Complex

'DETROIT, March 26 (INS). A 24-year-old youth was being held for trial after telling police his $250,000 arson spree sprung from a childhood hatred of his fireman father.' Colorado Springs *Gazette-Telegraph.*

Success Story

'A $12-MILLION SUCCESS AT 35 — HERE'S WHY

'James William Alsdorf is a solid young Chicago businessman. He's 35, head of a $12,000,000 corporation, and has been in the hospital only six times with stomach ulcers.' Chicago *Sun-Times.*

Honi Soit . . .

'Dear Editor:

I am not a Communist, I have never been a Communist, and I do not carry a card. But might I suggest that in order to ease the water shortage, the population of New York, for the duration of this crisis, use paper plates. . . .' (from the readers' column in the New York *Compass.*)

✡ NEWS AND MISCELLANY ✡

SINCE LAST autumn the University of Chicago Chapter of the International Society for General Semantics has been holding meetings on alternate Saturday afternoons to study the works of RUDOLF CARNAP and PHILIPP FRANK, under the leadership of ANATOL RAPOPORT. Between 80 and 100 people attended the session of February 18. . . . The Chicago Chapter heard, on October 28 and January 27, JAMES V. CLARK give two preliminary reports of a research project in the teaching of general semantics to patients at Manteno (Ill.) State Hospital; the project was directed by DR. ALFRED P. BAY.

ON OCTOBER 6, 1949, the Detroit Society for General Semantics heard R. B. BAIRD on the subject of 'The Application of Scientific Method to Production Problems in Industry.' ROBERT BLAKELY of the St. Louis *Star-Times* spoke to the St. Louis Chapter on November 17 on 'General Semantics and the Press.' The St. Louis Chapter also heard, on December 9, EARL ENGLISH, of the School of Journalism, University of Missouri, on the subject, 'Teaching Semantics in the School of Journalism.'

EVENING COURSES in general semantics are being given by PEYTON CALLAWAY, WALTER MILLAR, BERNARD CHALIP, EARL DYKES, and W. R. BOORMAN in various high schools in the Los Angeles area. CONRAD WEDBERG has introduced a full credit course in general semantics in the evening division of Los Angeles City College. KENNETH OLIVER, chairman of the English department of Occidental College, who last year was awarded a scholarship to the Institute of General Semantics by the Pasadena Chapter, spoke to a meeting of the Los Angeles Chapter on February 3 on the applications of general semantics to the teaching of English.

More evening classes in general semantics: CLARENCE L. MEADER is giving courses entitled 'Scientific Living' and 'The Science of Meaning' in Ann Arbor and Detroit in the University of Michigan Extension Service. University College of the University of Chicago announces a ten-session seminar ('Language, Meaning, and Maturity') beginning April 4, and a weekly series of six public lectures ('How Can Semantics Help?') beginning April 26, to be offered by S. I. HAYAKAWA. In San Francisco, MARJORIE MARKILLIE and WILLIAM PEMBERTON are conducting evening classes in general semantics at Marina High School.

IT IS WITH sincere regret that the International Society announces the resignations of EDWARD MACNEAL, executive secretary, and CAROL KESSLER, membership secretary. During the years they have worked for the Society, it doubled its membership. They pulled the Society through a most difficult period, originated many improvements in procedure, and are leaving the Society in the strongest financial position it has ever enjoyed. JEAN TAYLOR (Mrs. George A.) and LOUISE CLARK (Mrs. James V.) have been appointed to the positions of executive secretary and membership secretary.

[Advertisement]

WHAT CAN I DO for you in Europe this summer? Young woman, business experience, public relations, Northwestern U. graduate, IGS seminar '49, excellent references, sailing May 29 for England, France, Italy, Switzerland. Write Box 1, c/o *ETC.*

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PARTIAL LISTING OF IMPORTANT ARTICLES IN BACK ISSUES STILL AVAILABLE

VOLUME I. No. 1. Korzybski, 'The Brotherhood of Doctrines.' Glicksberg, 'General Semantics and Psychoanalysis.' Bloodstein, 'General Semantics and Modern Art.' Wendell Johnson, 'You Can't Write Writing.'

VOLUME II. No. 2. Felix Cohen, 'Transcendental Nonsense and the Functional Approach.'

VOLUME III. No. 1. Gustaf Stromberg, 'The Autonomous Field.' Stewart Holmes, 'Music, The Discipline of Silence.' H. R. Huse, 'Reading and Understanding.'

No. 2. Adrian Young, 'The Figure in Film.' A. Rapoport, 'Semantic Aspects of Language and Mathematics.' Hayakawa, 'Poetry and Advertising.'

No. 3. Irving Lee, 'Evaluation: With and Without Words.' Clifton Utley, 'Can a Radio Commentator Talk Sense?' Hayakawa 'Non-Aristotelian Revision of Morality.'

No. 4. A. Korzybski, 'A Veteran's Readjustment and Extensional Methods.' Trigant Burrow. 'Behavior Reactions in the Individual and the Community.' Allison Davis, 'The Underprivileged Worker.'

VOLUME IV. No. 1. Philipp Frank, 'Science Teaching and the Humanities.' Benjamin Selekman, 'Wanted: Mature Managers.'

No. 2. Irving Lee, 'Why Discussions Go Astray.' Alice Cherbeneau, 'Bringing Up the Family Semantically.' Elwood Murray and others, 'The Basic Communication Course.'

No. 3. Russell Meyers, review of *People in Quandaries*. A. Rapoport, 'Music and the Process of Abstraction.'

No. 4. Hayakawa, 'The Revision of Vision: A Note on the Semantics of Modern Art.' Norman Crowder, 'Methodology in the Social Sciences.'

VOLUME V. No. 1. Seymour Nathan, 'General Semantics in the Business World.' Sherman Paul, 'Toward a General Semantics Literary Theory.' William Hull, 'Moby Dick: An Interpretation.'

No. 2. A. Rapoport, 'Dialectical Materialism and General Semantics.' Wendell Johnson, 'How to Ask a Question.' J. R. Loofbourow, 'Operational Analysis in Administration of Research.'

No. 3. Felix Cohen, review of the President's Civil Rights Report. Lawrence Leshan, 'A Case of Schizophrenia, Paranoid Type.' Kurt Goldstein, 'On Naming and Pseudo-Naming.'

No. 4. Hayakawa, 'What is Meant by Aristotelian Structure of Language?' R. Meyers, 'The Aims of General Semantics and the Methods of Science.' R. Carnap, 'Probability as a Guide in Life.'

VOLUME VI. No. 1. Bhykovsky, 'Semantics: The Morass of Modern Bourgeois Philosophy' (a Soviet view of semantics). R. Meyers, 'What is "Reality"?' (a neurological view). Meader, review of Zipf's *Psychobiology of Language*.

No. 2. A. D. Sheffield, 'Meanings of the Word "Communist."' Sherman Paul, 'Whitehead and Langer.' Hayakawa, 'Why was Thomas Dewey Defeated?'

No. 3. Evelyn Riesman, 'Childhood Memory in the Paintings of Miro.' Rapoport and Shimbel, 'Mathematical Biophysics, Cybernetics, and General Semantics.' Hayakawa, 'Anti-Semitism.'

No. 4. Loren Borland, 'The National Health Insurance Bogey.' Lundberg, 'Semantics in International Relations.' Lindgren, 'General Semantics in Counseling.' Hockett, 'Biophysics, Linguistics, and the Unity of Science.'

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